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# PC USER

AUSTRALIAN

30-PAGE  
SUPERGUIDE



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Get *PC User's* complete  
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starting with part 1 in this issue

**DVD  
PLUS CD**

## 22 EXCLUSIVE TOOLS!

Over 4GB of software, games & video guides

### SONY'S NEW PSP

- Ditch your GameBoy, iPod and portable DVD player
- How to convert video and audio for PSP

### THE COOLEST TIPS

- How to stream movies around your home
- Turn your Xbox into a media centre
- Tune in to Podcasts

### HOT SHOOTOUTS

- 20 MP3 players in Australia's toughest audio tests
- Portable media players
- Home theatre media players
- Media centre PCs
- GeForce 7800 GTX video cards

### BIG-SCREEN TESTS

- 18 flat-screen LCD and CRT monitor reviews
- 18 data projectors

**WIN A MEDIAGATE MG-35**  
10 media players up for grabs

HOME SCREEN  
Read it on your TV

### 5 FREE DVD RENTALS

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**PC USER**  
DVD PLUS CD  
SEPTEMBER 2005

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09



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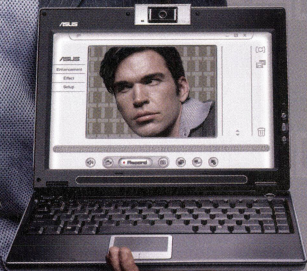
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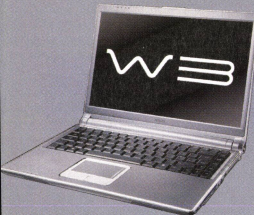


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# Contents

PC USER

## Sony's new PSP

Ditch your GameBoy, iPod  
and portable DVD player ... **64**  
How to convert video and  
audio for PSP ..... **66**



## Hot shootouts

20 MP3 players in Australia's  
toughest audio tests ..... **34**  
Portable media players ..... **44**  
Home theatre media players ... **122**  
GeForce 7800 GTX video cards ... **58**

### SUBSCRIBE AND WIN!

FOR YOUR CHANCE TO WIN  
1 OF 10 MEDIATEGATE MG-35  
MEDIA PLAYERS VALUED  
AT \$299 EACH DETAILS PAGE 96

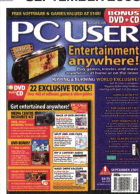


## The coolest tips

How to stream movies around  
your home ..... **78**  
Turn your Xbox into  
a media centre ..... **88**  
Tune in to podcasts ..... **86**



SEPTEMBER 2005



Design: David Collins

See the cover discs for details  
of the HomeScreen DVD offer.



### LOG IN

CD/DVD contents ..... 8  
Editorial ..... 10  
Consumer report ..... 12  
Virus & bug report ..... 14  
Hardware report ..... 14  
Up and coming ..... 16  
Help Station report ..... 16  
Readers' letters ..... 18  
Privacy notice ..... 18

### TEST BENCH

Hardware reviews ..... 22  
Panasonic DMC-FZ5, MSI  
MEGA mPC 800K, Acer  
TravelMate 3002WTCi, Toshiba  
Qosmio G20, D-Link AirPlus G  
DWL-G730AP

Software reviews ..... 24  
Sony ACID Pro 5, Opera 8,  
Netscape 8.

Best-value PCs ..... 26  
The latest media centre PCs.

Top Buys ..... 32  
Our picks of the best hardware  
and software.

### FEATURES

Music on the go ..... 34  
Portable music players tested.  
Movies and music  
on the go ..... 44  
The latest portable media  
players reviewed.

The big picture ..... 48  
We test 18 of the latest big-  
screen monitors.

### UPGRADE

Reviews ..... 58  
GeForce 7800 GTX graphics  
cards and an SLI motherboard.

### GAMES

PSP vs Nintendo DS ..... 64  
New portable games consoles  
from Nintendo and Sony.

PSP music and video guide .. 66  
Turn your PSP into a full-  
featured portable media player.

Previews ..... 68  
Sneak peeks of King Kong,  
Prince of Persia 3, Blazing  
Angels: Squadrons of WWII and  
Far Cry: Instincts.

Verdicts ..... 70  
The hottest games reviewed.

### ENTERPRISE

Data projectors ..... 72  
Bring your display to life.  
Tip of the month ..... 77  
Free tools for your Web site.

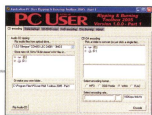
### TIPS & TWEAKS

Streaming video ..... 78  
Set up a video streaming  
network in your home.  
Networking ..... 82  
Boost your wireless network.

# Entertainment anywhere!

## RIPPING AND BURNING WORLD EXCLUSIVE!

Get *PC User's* complete Ripping & Burning Toolbox starting with part 1 in this issue ..... 84



## Big-screen tests

- 18 flat-screen LCD and CRT monitor reviews ..... 48
- 18 data projectors ..... 72



- DIY software ..... 84
  - Build the first part of our new ripping and burning application.
- Internet ..... 86
  - How podcasting works.
- Xbox upgrading ..... 88
  - Turn your Xbox into a Linux-based media centre.
- Peer to peer ..... 93
  - How to use Shareaza.
- Windows XP ..... 94
  - Create a boot disk.
- Windows 98/Me ..... 98
  - Get more out of image files.
- Office ..... 100
  - Columns in your documents.
- Design ..... 103
  - Customising Publisher.
- Photo editing ..... 104
  - Using Photoshop CS2.

- DIY music ..... 106
  - Mix music in ACID XPress.
- Web authoring ..... 108
  - Working with images.
- HELP STATION**
  - Help Station Q&A ..... 110
    - Technical questions answered.
  - FAQ ..... 114
    - Copying and pasting tips.
  - Cover disc tutorials ..... 116
    - A guide to using X-OOM Movie Clone 3 Go!
    - Paragon Drive Backup 2004 and Ashampoo File Splitter & Joiner.
- AFTER HOURS**
  - Play PC videos on your TV ..... 122
    - Media players that let you access your PC from the lounge room.
  - Cool and new ..... 124
    - The latest in cool tech gadgets.

## REVIEWED THIS ISSUE

### HARDWARE

- Acer AC915 ..... 52
- Acer AL1913sm ..... 50
- Acer Aspire T630 ..... 30
- Acer PD113P ..... 73
- Acer PD125 ..... 74
- Acer PH110 ..... 76
- Acer TravelMate
  - 3002WTCL ..... 22
- Apacer Audio Steno
  - AB320 ..... 35
- Apacer Audio Steno
  - AP510 ..... 36
- Apacer Audio Steno
  - AV230 ..... 36
- Apple iPod Shuffle ..... 36
- Apple iPod ..... 42
- Archos AV420 ..... 44
- Archos Gmini 400 ..... 46
- ASUS P5ND2-SLI Deluxe ..... 62
- Banksia Digital PMP20 ..... 45
- Belkin TuneCast II Mobile
  - FM transmitter ..... 124
- Belkin Voice Recorder
  - for iPod ..... 125
- BenQ FP321W ..... 56
- BenQ FP91V+ ..... 49
- BenQ PB6210 ..... 74
- BenQ PE5120 ..... 76
- Buffalo Link Theater ..... 122
- Creative Digital Wireless
  - Headphone CB2530 ..... 125
- Creative MuVo Mix ..... 34
- Creative MuVo TX FM ..... 34
- Creative Zen Micro ..... 40
- Creative Zen Neon ..... 40
- Creative Zen Portable
  - Media Center ..... 45
- Creative Zen ..... 40
- Dell 2405FPW ..... 55
- D-Link AirPlus G
  - DWL-G730AP ..... 24
- Emagen Aveve 1200 ..... 28
- Epson EMP-732 ..... 74
- Epson EMP-S3 ..... 73
- Epson EMP-TW10H ..... 76
- Epson P-2000 ..... 45
- Geil iBall ..... 38
- Gigapage MediaMVP ..... 123
- HP L1902 ..... 49
- HP mp3222 ..... 74
- HP vp6315 ..... 73
- InFocus ScreenPlay 4805 ..... 75
- InFocus X2 ..... 73
- InFocus X3 ..... 74
- iPod Camera Connector ..... 124
- KISS DP-1500 ..... 123
- Klipsch ProMedia
  - Ultra 2.0 ..... 124
- Laserprod ..... 125
- Lexar Digital Music Player
  - LDP-600 ..... 35
- LG Flatron L1950S ..... 49
- LG Flatron T910B ..... 54
- Linophir L117 MP3 Player ..... 34
- Marvel Computers
  - Media Centre 3400i ..... 26
- Mitsubishi DV197SB ..... 48
- Mitsubishi DV992A ..... 55
- MSI MEGA mPC 800K ..... 22
- MSI Mega Player 521 ..... 35
- MSI Mega Player 522BT ..... 35
- MSI Mega View 566 ..... 46
- NEC AccuSync LCD92V ..... 50
- NEC HT410G ..... 76
- NEC MultiSync LCD4010 ..... 57
- NEC VT47G ..... 73
- Nintendo DS ..... 65
- Orbit DMP-768T ..... 46
- Panasonic DMC-FZ5 ..... 22
- PC eXpress Phoenix
  - 1060A ..... 26
- PCQUEST Cinevue ..... 28
- Philips 190S6 ..... 50
- Philips 200W6 ..... 56
- Philips 230W ..... 57
- Pinnacle ShowCenter
  - 200 ..... 122
- Pioneer DreamVision
  - HD200 ..... 42
- Pioneer DreamVision
  - MP318 ..... 35
- Rectron CMATCS-81915GMF-3200MCE ..... 28
- Samsung YH-820 ..... 40
- Samsung YH-925 ..... 42
- Samsung YP-T7Z ..... 36
- Sony PSP ..... 64
- Sony VPLDS100 ..... 75
- Sony VPLES2 ..... 72
- Sorell SV-10 ..... 44
- TI Computers Media
  - Center 1000 ..... 28
- Toshiba Qosmio G20 ..... 23
- Toshiba TDP-MT200 ..... 75
- ViewSonic G90+ ..... 54
- ViewSonic VP231wb ..... 57
- ViewSonic VX924 ..... 52

### SOFTWARE

- Blazing Angels: Squadrons
  - of WWII ..... 69
- Destroy All Humans ..... 70
- ER ..... 71
- Far Cry: Instincts ..... 69
- God of War ..... 70
- King Kong ..... 68
- Madagascar ..... 70
- Netscape 8 ..... 25
- Opera 8 ..... 24
- Prince of Persia 3 ..... 68
- Retro Atari Classics ..... 71
- Sony ACID Pro 5 ..... 24



CIRCULATION: 64,332 copies sold per issue (ABC Circulation Audit, December 2004). READERSHIP: 423,000 readers per issue (Roy Morgan Readership Survey, September 2004). WINNER of the 2004 Sun Microsystems IT Journalism Award for 'Best Technical Title'.

# CD & DVD contents

PC USER

## X-00M Movie Clone 3 Go!

Produce cinema-quality DVD movie backups in under 10 minutes on a DVD-R, double-layer DVD-R, or directly onto your hard drive. Note: does not back up copy-protected DVD movies. For more, read our tutorial on page 116.



## Ashampoo File Splitter & Joiner

This useful utility enables you to split files to save large documents that are too big to fit on one CD, or split large files that you want to show as email attachments. We show you how to use the software on page 120.



## Paragon Drive Backup 2004

Create complete backups of your hard disk or separate partitions without having to reboot Windows. Learn more on page 118.

REQUIRES ONLINE REGISTRATION



## VTC Windows XP Admin

The latest instalment of this complete training course.



## HomeScreen

Trial this great online DVD rental service and get five free DVD rentals, as well as 50% off the first two months when you continue your subscription after your free trial.\*

## PC User Ripping & Burning Toolbox 2005

World Exclusive! Part 1 of our tool contains a fully working audio ripper.



## Media Centre Resource Kit

Everything you need to convert and stream audio and video files, find and record podcasts or turn your PC, Xbox or PSP into a media centre.



**NOTE:** Unless indicated otherwise, the listed programs may be shareware or trial versions.

\* Terms and conditions apply. See cover discs for details.

### CD CONTENTS

#### RESOURCE KIT:

##### PODCASTING AND STREAMING SOFTWARE

Shoutcast Server DNAS 1.9.5, Streamsicle 2.0, Replay Radio 6.0, iTunes 4.9, Doppler Radio 2.0.0.3, FeedDemon 1.5V, iPodder 2.1, Winamp Basic 5.09

##### MEDIA CENTRE ALTERNATIVE SOFTWARE

GB-PVR, MediaPortal, Chameleon, xLobby, MediaEngine

#### SOFTWARE:

##### FREE FULL VERSIONS

Ashampoo File Splitter & Joiner, Paragon Drive Backup 2004, X-00M Movie Clone 3 Go!, PC User's Ripping and Burning Toolbox

##### BROWSERS

Avant Browser 10.0 build 168, Maxthon 1.3.1, Mozilla Firefox

1.0.4, Slim Browser 4.05 build 007, Netscape Navigator 7.2

#### ONLINE TOOLS

AbcShortcuts 1.0, All-in-One SECRETMAKER 4.1.8, Electronic Phone Book 1.8.5, ePromoter 2.0, Gaim 1.3, Newzive 0.9.91, SmartFTP 1.5.988, Viewpoint Toolbar 2.0.0.35, MeBlog 1.0

#### UTILITIES

Ace Utilities 2.5.0, IconXpert 1.02 build 129, Ignition 2.9.1.51, Mini Shut Down Utilities 2.8, Resync 1.7.14, VersionBackup 3.0

#### ANTIVIRUS

NOD32 2

#### MAG STUFF:

Audio and video streaming, Podcasting and RSS feeds, Xbox Linux Media Centre, PlayStation Portable audio and video guide, Macros, Peer to peer, Rip and burn, Copy and paste

### ENTERTAINMENT:

#### FREE GAMES

Commando, Mark Basehore's Super Damage House, Noctis V, Super Mario Pac, Super Methane Brothers, TRIUMPH! WAR 2099

#### GAME DEMOS

Worms 4: Mayhem

#### TUTORIALS:

VIDEO TUTORIALS  
DVD-ROM upgrade

### DVD CONTENTS

#### ENTERTAINMENT:

##### FREE GAMES

Commando, Mark Basehore's Super Damage House, Noctis V, Super Mario Pac, Super Methane Brothers, TRIUMPH! WAR 2099

##### GAME DEMOS

Battlefield 2, Chaos League:



# DVD EXCLUSIVES!

This month's DVD exclusives include demos of *Battlefield 2*, *Cricket 2005*, *Area 51* (single player) and *Chaos League: Sudden Death*, as well as the latest mods for *Half-Life 2*, *DOOM 3* and more. There are also 14 exclusive video guides, including how to use X-OOM Movie Clone 3 Go! and Ashampoo File Splitter & Joiner, a video walkthrough of *Grand Theft Auto: San Andreas*, how to set up a home network, how to create watermarks with Microsoft Publisher and much more. Plus, the latest

instalment of VTC's Windows XP Admin complete video training course. If that's not enough, we've also provided an Essentials Pack featuring all the essential security and privacy utilities, tools for our magazine guides in addition to ripping and burning apps.

Please note: some of the full-version software requires online registration. All content, apart from the bonus DVD content, is available on both the CD and DVD. The DVD-ROM requires a computer DVD drive.



## USING THE COVER DISCS

### Startup

The cover discs use a Web-style interface. You only need to install a Web browser to be able to view the contents. If you already have a browser installed, then the discs will autorun (for Windows 95/98/Me/2000/XP) and load your default browser at the home page of the disc. If the discs do not autorun, simply launch your favourite browser and open the page DEFAULT.HTM from the root of the disc. If you don't have a Web browser installed, you can install one from the discs. See the cover disc case for details.

### System requirements

The PC User CD can be used with any PC that reads DOS-based CD-ROMs; the DVD requires a DVD-ROM drive. However, we recommend use with Microsoft Internet Explorer 4 or later for Windows, which requires at least a 486 with 8MB of RAM. The third-party software on the discs will often have higher system requirements.

### Before using the CDs

We've provided installation instructions on the disc case's back cover, including what to do if you have problems. Please read these carefully before using our cover discs. Also, click on 'Terms of Use' on the default page of either disc and read the terms and conditions of use before use. If you agree with the terms, you may continue to use the discs, and this use will constitute your acceptance of the conditions stated. If you do not agree with all of the terms, you may not continue to use the discs and you should return the discs and magazine to us for a refund. We also recommend that you read our Help file, which is available from the default page.



Sudden Death, Area 51 single-player, Cricket 2005 demo, Worms 4: Mayhem

### GAME MODS

Doom3[CC] 2.0 mod, Eclipse mod for Half-Life 2, Garry's Mod 8.3a for Half-Life 2, Project Raptor 4 mod for Command & Conquer Generals: Zero Hour

### GAME PATCHES

Act of War: Direct Action 1.05 patch, ER patch #1, SWAT 4 1.1 patch, World of Warcraft 1.5.0 patch

### GAME MOVIES

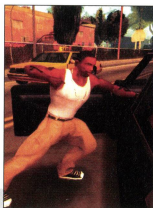
Halo 2 Sanctuary trailer, Halo 2 Turf trailer, Need for Speed Most Wanted, Prey in-game footage, Serious Sam 2 trailer

### GAME TUTORIAL

Grant Theft Auto: San Andreas

### DVD RELEASES

Being Julia, Coach Carter, Hating



Allison Ashley, Hitch, Hostage, Miss Congeniality 2: Armed and Fabulous, Sahara, The Extra, The Hitchhiker's Guide to the Galaxy, The Interpreter

### MAG STUFF:

Xbox Gentoo Media Center Linux ISO

### TUTORIALS:

#### VIDEO TUTORIALS

DVD-ROM upgrade, VTC Windows XP Admin, Setting up a wireless network, X-OOM Movie Clone 3 Go!, Microsoft Publisher: watermarks, Ashampoo File Splitter & Joiner, Word processing: columns, Adobe Photoshop CS2: vanishing point, Web images, XP boot disc, Networking: part 1, Networking: part 2, Wireless network security

### PC USER'S ESSENTIALS PACK:

SECURITY & PRIVACY TOOLS  
12 Ghosts Wash LE 7.10,  
Cryptainer LE 5.0.1.0, FileMap  
by BB 3.0.2, Grisoft AVG 7.0,  
Spooftick for Firefox, Spybot -  
Search & Destroy 1.3,  
SyncBack 3.2.5, ZoneLabs  
ZoneAlarm 5.5.062

TOOLS FOR MAGAZINE GUIDES  
Audacity 1.2.3, Azureus

2.2.0.0, IE View 0.84, Mozilla  
Firefox 1.0.1, Mozilla Thunderbird  
0.9, Nvu 0.5, OpenDownload  
0.2.1, OpenOffice.org 1.1.3,  
The GIMP 2.0.5, Zwei-Stein 3.01

### RIPPING & BURNING TOOLS

CDBurnerXP Pro 3.0.116,  
CDEX 1.51, LAME ACM Codec  
0.9, TMPGEnc 2.521, VCD Easy  
1.15.2, VirtualDubMod 1.5.10.1,  
Xvid 1.0.3

# What's fair use?

## Glenn Rees explains why copyright laws are vital to how we use technology.

**Y**ou may not be aware of it, but we're in the midst of a pitched battle. Copyright owners such as record companies have declared war on pirates, with us, the ordinary consumers, caught in the middle. In fact, many consumers are seen as the enemy by some copyright owners because they don't see them as innocent bystanders when it comes to piracy.

The trouble is the definition of piracy varies according to your point of view. The Australian Record Industry Association (ARIA) has unequivocally stated that consumers should not be allowed to make any copies of their music for any reason. All the consumers I know believe we should be able to make copies of music or movies for personal use. Most agree it's wrong to give copies to friends or to download pirated material, but there's little doubt some do it anyway.

And that's the problem with copyright laws. How can you set laws that are fair to everyone? At the same time, many of today's most exciting new devices have uses that are technically illegal. Currently, it's illegal to copy and convert the majority of commercial movies and music for use with Sony's PSP (reviewed on page 64), one of the portable media players reviewed on page 44, or a home theatre media player (page 122), media centre PC (page 26) or MP3 player (page 34).

However, a potentially far-reaching review of Australia's copyright laws is being

undertaken by the federal government. The issue paper, *Fair Use and Other Copyright Exceptions*, makes interesting reading because it contains a summary of the existing copyright laws, various overseas laws and submissions for law changes by the Copyright Law Review Committee (CLRC).

You can read the full paper at <http://tinyurl.com/8lfp3>, but essentially, the CLRC's main recommendation is that we should follow the open-ended 'fair use' provision in US law. According to the issue paper, "The application of fair use in the US as determined by their legal system specifically provides for several unique copyright doctrines, namely time shifting and space shifting".

Time shifting is simply the ability to record TV and radio broadcasts for later viewing and listening, while space shifting is fancy term for converting content for use on a different device (such as converting audio from a CD to MP3).

The Australian Copyright Council (ACC) disagrees in its submission (see [www.copyright.org.au/pdf/acc/Submissions/X0503.pdf](http://www.copyright.org.au/pdf/acc/Submissions/X0503.pdf)). An organisation that represents the interests of authors, artists and copyright owners, the ACC contends that the US fair

use provision would create uncertainty and reinforce the belief that it "would allow free private copying in a large range of circumstances". However, it is in favour of specific exceptions, including "the private copying of audio and audiovisual material, in certain circumstances, provided copyright owners are remunerated for the copying". Mostly, that remuneration should be "generated by levies payable on copying equipment and/or media". Notably, the ACC's paper says that one of its affiliates, ARIA, does not support the ACC's position on a private copying exemption tied to payment to copyright owners. ARIA has made its position regarding copying very clear (see <http://tinyurl.com/dq474> for a PDF).

Unfortunately, even a change of law to allow private copying may be useless in some circumstances anyway. Under Australia's Free Trade Agreement with the US, the government is committed to even tighter controls on "circumventing technological protection measures". Basically, that's any device (or software) that defeats copy protection, such as the technology used on commercial DVD movies. What's the point of allowing private copying if it's illegal to use the tools that enable you to make the copies?

The *Fair Use and Other Copyright Exceptions* paper was released in May and officially, submissions to the government have already closed (on July 1). However, as a citizen you are always entitled to voice your concern to the government. Do you want to be able to legally convert movies and/or music for your personal use? If so, you should contact your local MP or the federal Attorney-General's Department directly. ☺

### COMING UP

There's a huge range of tools available to fight spyware, viruses, hackers and spam, but which ones actually work? In the October issue, we put security software to the ultimate test. That's as well as all our regular tips and tutorials, reviews of PC products and home entertainment gear, plus exclusive video tutorials, free software and games on our cover discs.

## PC USER

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THE POSSIBILITIES ARE INFINITE

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## Super clarity widescreen.

Fujitsu recommends Microsoft® Windows® XP Professional.

The LifeBook N3510 is the ultimate advancement in mobile home entertainment technology. Business and home users can experience enhanced performance and greater processing power. This high performance notebook boasts a 15.4" SuperFine Wide display with a 130-degree multi-viewing angle that provides superior clarity for rich multimedia playback and movie-viewing - perfect for demanding business presentations, or enjoying the latest DVD movies.

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# Dealing with overseas suppliers

**John Hilvert investigates reader complaints.**

**W**ith many great services available through the Net, it can be a pain when you don't get a response from your supplier, especially if they are overseas. Such was the

plight facing Ian Shephard. Shephard paid to renew his subscription to FarStone VirtualDrive Pro for a further 12 months. But he found the key provided to activate his subscription was out of date or

rejected. "I have emailed FarStone 11 times and they just do not respond."

Consumer Report had better luck and got a response within a day from the US-based FarStone indicating they would look into it and get back to us shortly.

Its marketing manager, Don Lewis said the company had

converted from one tech support email system and contact address to another one. "The issue with Mr. Shephard must have occurred during that time which also was during a personnel change in our Tech Department. It appears that Mr. Shephard is satisfied for the moment."

## PC USER COMMENTS

1. In this case, the outcome was good. But it's always wise to check a company's support by trying its support system before committing to any subscription.
2. FarStone also offers the following tips to obtain better technical support from any overseas company, including themselves:
  - ◆ Always contact technical support in the suggested manner that the company provides. There is usually a good reason why it is set up that way and, in addition, is probably the most effective way for requests to be processed in a timely manner.
  - ◆ If you have not received support in the specified or expected timeframe, check with

the company for other contact and problem resolution options. For example, check FAQs on their Web site if applicable, check for other contact methods such as phone numbers and email addresses. Is there a customer bulletin board to post questions and share stories with other customers of that same company?

- ◆ You should be active in attempting to contact the company.
- ◆ If you have no luck with verbal or electronic communication after a reasonable timeframe (depending on the nature and severity of the problem), write a letter and send it 'certified-receipt requested' (of course, this would depend on the severity of the issue and you

would have to make a judgment call based on your own personal investment already made in terms of time and product costs).

3. Dealing with an overseas company can be tough, as regulatory support may be less easy. With US-based companies, this should improve under the forthcoming Australia-United States Free Trade Agreement. It includes a 'cross-border consumer protection' provision (article 14.6), where Australia and the US agree to strengthen their cooperation in areas covered by their consumer protection laws; in particular, fraudulent and deceptive commercial practices against consumers.

## How we can help

A nagging problem that hits our mail bag quite frequently is when vendors agree to do right by a consumer, but only if they withdraw their complaint to *PC User*. A recent case regarded a notebook that wasn't working and had to be returned to the distributor three times.

On the third trip back to the vendor, the notebook was badly damaged during transit, but the company refused to accept

responsibility for the damage.

We received a letter of complaint from the reader (which was also posted to the distributor) detailing the problems experienced since purchasing the laptop.

The notebook had failed to operate satisfactorily since it was purchased. Issues such as screen display, optical drives and general reliability were raised. In his letter, the reader

concluded he was keen to resolve the issue and would be satisfied with a replacement unit of equal value.

We wrote to the distributor, asking for their comments and what options, if any, were available to our reader. As it happened, the distributor contacted us fairly quickly to say that the customer in question had been contacted and a satisfactory solution was

reached — a replacement unit was being sent to him.

Furthermore, we received a letter from our reader to say that he was grateful for our assistance, but that he didn't want *PC User* to divulge details about the problem or the problem vendor. The vendor had only agreed to send a replacement notebook to our reader if he agreed to withdraw his complaint to *PC User*. ☹

## PC USER COMMENTS

1. Under the Trade Practices Legislation, you have a right to expect products that you purchase as being merchantable — i.e. to perform as promised and expected.
2. If not, you have a right to return them and, if necessary, get a refund, repair or suitable equivalent.
3. To facilitate this, you should return the product to your supplier, documenting the

issue. If you don't receive a good response, you can report the issue to your local Consumer Affairs Bureau or lodge a complaint with your Small Claims Tribunal.

4. This can be tough, so it can be worthwhile reporting the issue to the media.
5. By all means refer your complaints to us; we are happy to enquire into the issues as a matter of education and a service to our readers.

Sometimes our inquiry will trigger a resolution.

6. In this case, we've decided it's a win-win arrangement. Our reader gets a resolution, the vendor gets to exercise his resolution without having his company or the product publicised and we get to write about it generally. It is a case-by-case issue and we may exercise discretion to publish details when the case so warrants it.

# SOFTWARE PIRACY HAS ALWAYS BEEN CRIMINAL. NOW IT'S A CRIME.

**THINK BACK NOW...** to that day at school when Nigel (it seems an appropriate name) borrowed your new eraser.

Remember?

The perfect, soft one that you never saw again. And despite your pleas to Miss Cross (ditto, the name), there was never any justice.

## 'BORROWING' SOFTWARE IS EQUALLY UNJUST.

It takes hundreds of people, thousands of hours (not to mention millions of investment dollars) to develop a professional software application.

It's their creation that they've worked hard for. It deserves to be protected and fairly rewarded.

But software piracy robs everyone of their just entitlement. It's frustrating and demoralising. It's not borrowing, it's having a lend.

## NOW IT'S ALSO A CRIMINAL OFFENCE.

Until recently, any redress against businesses using illegal software has had to be pursued through civil courts.

On 1 January 2005, however, the Australian Copyright Act was amended, making the use of illegal software by businesses a crime.

## THERE IS A HIGH PRICE TO PAY.

Civil damages can still be sought for breach of copyright. But with the change in law, substantial criminal penalties can also apply for businesses gaining commercial advantage.

And it's not only the organisation that could pay the penalty for illegal software use. Directors and employees also risk criminal charges if convicted.

■ **Organisations** can face substantial fines of up to \$467,500.

■ **Individuals** can be fined up to \$93,500 and sentenced to a maximum of 5 years' jail.

## THERE'S THE SHAME, TOO.

Time and money aren't all that's at stake. So is something just as valuable in business.

Reputation.

The fortunes of many businesses have peaked and plummeted with it. In fact, some leading Australian companies have been sued for using illegal software.

Let's try and sneak a few company names past the censors:

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

## IT ONLY TAKES A SECOND TO COMMIT THE CRIME.

A roll of the mouse and the click of a button is all it takes to illegally install an application or make an unauthorised copy of software disks.

A split second.

That's all the time it takes to put your business in serious jeopardy.

## BUT WHAT'S A SOFTWARE CRIMINAL LOOK LIKE?

Black masks? Striped shirts?

If only it were so easy to identify the culprits. But most software crime is committed by everyday people who have never had a brush

with the law. Often they're just trying to get their job done well. But by sharing or installing software inappropriately, they may be committing an offence.

## THERE ARE EASY STEPS TO TAKE.

Like all crime, if it's left unchecked, it can grow. So the first step towards stamping out software piracy is to commit to action. Next:

- **Establish** software management procedures for your organisation
- **Inform** all employees of your organisation's software management policy
- **Secure** your software and documentation in a safe place
- **Conduct** regular software audits.

For helpful tools and more information about software management, visit [www.bsaa.com.au](http://www.bsaa.com.au)

## OR CONTACT US FOR HELP.

We don't want Adobe software users paying the penalty for software piracy.

Please call and we will happily discuss your Adobe software requirements and work with you to ensure your Adobe licenses are compliant.

Just call AUS 1300 550 305 NZ 0800 444 735.



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## BUG & VIRUS REPORT

# Keep your browser patched

**Rose Vines** gives you a great reason to ensure you always have the latest version of your browser.

What version of Firefox are you using? So far this year there have been several major revisions to patch up security holes and other vulnerabilities in the browser. If the version you're running is anything earlier than 1.0.4 (click left on the menu, then 'About Mozilla Firefox'), you should visit [www.mozilla.org](http://www.mozilla.org) and download the most recent version immediately. There are some serious flaws in the early Firefox releases, although the open source browser still looks almost ironclad relative to the ever-leaking Internet Explorer.

In fact, whichever browser you use, it's vitally important to

keep it patched and up to date. A surprisingly large proportion of hacking attacks succeed by exploiting vulnerabilities for which a patch has already been issued! Once a vulnerability has been acknowledged and publicised, hackers have all the information they need to see whether they can take advantage of the flaw. Your unpatched browser is an open invitation to the hackers who exploit old holes.

### Phishing telldates

With increased reports of phishing scams targetting Australian banks, it's a good time to review some simple ways to spot phishing scams.

- ◆ Email that addresses you

generically, such as 'Dear Customer' instead of your name.

- ◆ Email with multiple recipients in the 'To:' field.

- ◆ Bad grammar and misspellings in the email.
- ◆ Links that take you to *anywhere* other than the financial institution's site. A simple way to detect this is to hover your mouse pointer over the link you are supposed to click within the email.

- ◆ Email con attachment.

 **Online credit cards**

Are you having a rethink about using your credit card online after the huge security breach earlier this year, which left 40 million cardholders vulnerable?

[illegible]

Unfortunately, it won't help you. That credit card schemozzle affected both offline and online credit card users.

In fact, having a credit card with online access to your account details is one of the better protection you can have. Normally, you have no idea what's going on with your card until you get your monthly statement. With an Internet-accessible account, you can check card activity on a daily basis and spot suspicious-looking transactions early. If your card has zero-risk fraud protection, as many do, you can keep an eye on transactions, and you can use your credit card most places, offline or on, with some confidence.

## HARDWARE REPORT

# Intel's day in court

## Chip minnow AMD dobs in heavyweight Intel to the teacher for bullying, says *Darren Yates*.

**C**hip manufacturer AMD has always been seemingly happy to pick up the market scraps Intel has left behind. But not any longer.

On June 28, AMD filed an antitrust suit against Intel, claiming anticompetitive practices. The case is said to include explosive claims that Intel coerced PC vendors, including Dell, into exclusivity deals featuring financial incentives to limit or exclude

business with AMD.

By June 30, AMD Japan had taken up the baton, suing Intel for US\$50 million after Japan's Fair Trade Commission had found Intel guilty in March of deliberately aiming to limit AMD's market share.

The following week, AMD had filed to seek that all third-party companies mentioned in the original suit keep any documents relevant to their trading with Intel.

Things only got worse for the

chip giant when the European Commission raided Intel offices on July 12 for evidence that Intel had broken EU antitrust laws in an investigation begun back in 2001.

If Intel is found guilty, it could have repercussions for the PC market as a whole, which enjoys healthy advertising incentives from Intel.


You can read the full complaint at [www.amd.com/us-en/assets/content\\_type/DownloadableAssets/AMD-Intel\\_Full\\_Complaint.pdf](http://www.amd.com/us-en/assets/content_type/DownloadableAssets/AMD-Intel_Full_Complaint.pdf).

According to online news publication The Register ([www.theregister.co.uk](http://www.theregister.co.uk)), the real fight starts the first

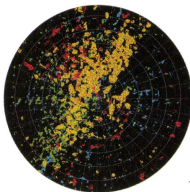
week in August, when both combatants meet for an initial court conference.

This is a huge play for AMD — going to court is sometimes seen as a last-ditch attempt to break the shackles, but AMD knows it has superior products at the moment and needs markets to turn those products into cold, hard cash.

You can guarantee this trial, will be a war fought in the trenches, and one likely go on for years, unless a deal is struck in the early stages.

But I'd be surprised if that happened — with the processor market worth billions, there are too many reasons to fight. 

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a multi-million dollar radar system, but we'll  
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**Build your career experience  
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## APPRENTICESHIP SPECIFICATIONS

NATIONAL QUALIFICATIONS

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GREAT PAY

UNMATCHED BENEFITS

NO PRIOR EXPERIENCE

PROMOTION OPPORTUNITIES

TEAM ENVIRONMENT

## NAVY TRADES

Electronics Technician

Marine Technician  
(Mechanical or Electrical)

Aviation Technician - Aircraft

Aviation Technician - Avionics

## No other apprenticeship offers you the travel and mateship that you'll find in the Navy.

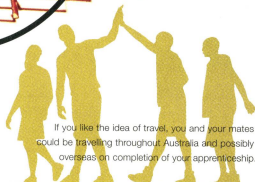
Despite what you might think, not all trade apprenticeships are the same. The Navy's technical trade schools are second to none, with excellent teacher/student ratios and top shelf equipment and facilities that provide you with the best qualifications possible in the fields of mechanical and electrical trades. Qualifications are nationally recognised and highly sought after in the civilian world.



You'll be paid a great wage while you train with  
a guaranteed job when you finish. Starting on \$25,100.p.a.,  
you'll earn over \$45,900.p.a. after training. You'll also  
receive a \$9,200.p.a. seagoing allowance.



You'll enjoy all sorts of  
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and dental, subsidised  
meals and accommodation.



If you like the idea of travel, you and your mates  
could be traveling throughout Australia and possibly  
overseas on completion of your apprenticeship.



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UP & COMING

# TV on the go

Take television viewing to greater heights. **Anna Raciti** looks at the cool new ways to watch TV.

In this issue, you'll find out how to be entertained anywhere—watch movies, play games and listen to music wherever you are. But you can't talk about entertainment without considering the good ol' telly. Fortunately, TV viewers are starting to see software and hardware devices designed to give the ultimate control over television viewing, while allowing you to watch your favourite programs wherever you are.

One of the most exciting things to happen to television in a long time is the digital video recorder (DVR), also referred to as a personal video recorder (PVR). It's a hard drive-based

recording device that records your TV content while allowing you to control it. You can pause, rewind or slow down a show as it's being aired; the content gets stored on disk as it streams. These devices have been popular in the US for years (the TiVo being a great example), but are virtually unknown here. Foxtel's iQ set-top box is perhaps the most prominent example of a DVR in Australia. LG is rumoured to be releasing its HDTV PVR in Australia soon, and if it does, other vendors probably won't take long to follow.

If you don't want to wait around for a DVR, consider a program from SnapStream Media ([www.snapstream.com](http://www.snapstream.com))

The Slingbox takes your television feed and sends it to your broadband connected PC—wherever it happens to be.



that actually turns your PC into a DVR. SnapStream's Beyond TV will do most of the cool stuff that a DVR will do. All you need is a TV tuner card in your PC, with the processing and storage left to your computer.

To supplement its flagship product, the company also offers Beyond TV Link—software that allows all the PCs in your home to have DVR functionality. All you need is a home network (wired or wireless), and the software will allow you to stream the content from one PC to other PCs on your home network.

If you want to take the TV streaming experience beyond the home, look out for a new

product currently available in the US called the Slingbox. The Slingbox ([www.slingmedia.com](http://www.slingmedia.com)) is a little device that connects to your TV, pay TV set-top box or to a PC with a TV tuner. The Slingbox then lets you view the broadcast on a broadband-connected PC anywhere in the world. As long as the PC or notebook has the Slingbox viewer software installed, you can log onto your Slingbox and watch whatever signal it is connected to. You can even change channels. Those who've tested the Slingbox say the video quality is much better than what you would expect for video transferred via the Internet.

## HELP STATION REPORT

# Reader solutions

You don't have to be a Help Station expert to have a good idea, writes **Paul Zucker**.

Search Help Station for the word **upgrade** and you'll find more than 700 matching questions. Change the search term to **upgrade** to find variations and there are over 1,000 matching questions. Not surprising considering the nature of Help Station and the number of questions that have been answered over the years.

Back in July, reader Rashid wrote in to ask: how can I update this 800MHz PIII, listing the specs of a typical PC a

few years old. Terry O'Shanassy started answering the question.

"Sorry Rashid, but I can't, in good conscience, answer your question in the way you'd like. The simple matter is, most of the components in that PC are so outdated that they're incompatible with anything new."

He went on to explain why almost no new components would mesh with the older ones, ranging from the motherboard to CPU to RAM and so on. He then explained

that a so-called 'upgrade' was usually best done by starting from scratch with a build-it-yourself bundle.

All of this made perfect sense, but it soon became obvious that there was another side to the story. Many Help Station readers wrote in to point out that Rashid's 800MHz PIII would have been a good system when bought, and there was no reason why it shouldn't be working just as well today, with a little housekeeping.

Unless Rashid had some recent applications such as games that needed a fast machine, he still had something that would run Windows XP (perhaps with a little more

RAM) and all the usual applications.

Some readers quite rightly suggested that if Rashid was absolutely intent on tweaking, he could make some small improvements such as buying a slightly faster processor on eBay. Purchasing second hand equipment at computer fairs or on the Internet can indeed be a cheap and easy way to upgrade your old machine!

And if you decide that it's too much trouble or if your upgrade doesn't work out as well as you expected, there will probably always be someone out there who will appreciate your old PC—no matter how outdated it may be. ☺



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# Letter of the month

## Great customer service



### Prize for the letter of the month

Designed specifically for notebook computers, the Microsoft Wireless Notebook Optical Mouse, valued at \$69.95, delivers users both portable comfort and performance. It combines the perfect mix of comfort and mobility, making it the ideal travelling companion.

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I am a regular subscriber to your magazine and enjoy it very much, even though I am somewhat of a neophyte when it comes to a lot of the technical matters you write about. But I am learning a lot through the magazine and I occasionally have cause to use your recommendations to begin a search for good equipment at fair prices.

I find your reviews very helpful and cannot agree with the critique you received and which you wrote about in your August edition. I will never purchase equipment from any company that does not submit its technology to a comparative review by technical experts, because I always believe that they must have something to hide if they are not willing to have their products publicly scrutinised. In addition, as I am very inexperienced in the technology field, I am totally reliant on those with the expertise to test and make recommendations.

Recently I searched my back copies of your magazine and used your April 2005 edition to find a new computer system. I decided that the Samoy 200 supplied by Reda Computer Technology in Sydney was the best value for me, combining great technology for my small business and at a fantastic price of only \$1,499. Your review gave it a score of 7 out of 10, but it was perfect for my office system. I could not find another computer with the same features for the price anywhere else and could not believe that I could get so much technology for that price.

I checked the Reda Web site, but the Samoy 200 was not listed for general sale. However, when I phoned them and mentioned your review in *PC User*, they said it was still available at the same price, but

with an improved LCD screen with a faster refresh time! Being as cynical as I am, I had expected at least an increase in price and possibly less technology for the dollar! My cynicism was totally unfounded.

I ordered it by email on a Wednesday morning at 11:00, adding extra dollars for Windows XP Professional and a second LCD screen at an excellent price. I paid for it by bank transfer at 12:00 noon and it was despatched that afternoon, arriving by mail in my country town in Victoria two days later. It arrived well packaged and undamaged with all discs and manuals in place.

I installed it over the weekend and it was up and running without a hitch on the Monday when the staff came in to work. The service from Reda was fantastic, the attention to questions I asked on the phone was great and the equipment is superb — it looks and runs like a dream! And I just love the LCD screen and the overall speed of the system.

Well done Reda and thank you *PC User* for your help with this purchase. I am one very happy customer.  
Jeff Barlow  
Healesville, Vic

*The writer of the best letter to PC User each month wins a prize. Just send your letter of no more than 300 words to PC User (see 'How to contact us', page 10), and please include your postal address and daytime telephone number. Entry is open to all residents of Australia other than employees of ACP Magazines. Entries for October close on August 17. The judges' decision is final. All entries become the property of ACP Magazines.*

## More tutorials

I've been a big fan of *Australian*

*PC User* for over three years now, and to my mind it represents the best value for money in a *PC* magazine. You have a first-class set of writers and your cover discs save me an eternity in download time!

However, the recent changes are not all perfect. Although I applaud your tutorials and their video accompaniments, it seems a shame they only seem to apply to the cover disc freebies. How about some tutorials on Adobe Premiere, Encore or Audition? For that matter why not have some tutorials on Microsoft Office or Adobe PageMaker or Ulead DVD Workshop? Most of us would love to see some of the commercial packages put through their paces before shelling out the huge cost for them. What does *PC User* give us instead? A one-paragraph review! Hardly exhaustive.

And talking about reviews, why don't you ever seem to review hardware offerings from Dick Smith Electronics? Virtually all of your readers have bought something or other from this big boy's toyshop. Many of us get our first viewing of new technology on its hallowed shelves. But does your magazine ever compare Dick's hardware with the big names? Never! Come on *PC User*, make your magazine even better and review some of Mr. Smith's goodies from time to time.

And how about relegating the children's games pages to the back pages again, where they belong!

Roger Pittman  
Nelson, New Zealand

## Cheap ink

I wanted to talk about my experiences using cheap ink to refill my inkjet cartridges. I have been refilling cartridges for several years, and now regularly refill without ☹

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gloves and without spillage. I have used ink from a number of suppliers without any real problems. The difference in cost is considerable, at around \$35 for an original cartridge and \$3 for a refill.

With my current printer, the best I have obtained is four refills, although with my previous printer, the best was 12 refills. I only use original cartridges, and the only problem I have had is the need to dry out the refill ink when printing on light cardboard to avoid smudging.

**Bernard Rubens**  
Internet

## Interstate vendors

I've just bought the August edition of *PC User*. I bought it mainly to read your articles on motherboards and the reviews of PCs. Unfortunately, by the time I got it home and started to read it, the memory kicked in and I remembered previous articles reviewing computers, where the suppliers are basically all from NSW.

While the article on PCs is

very good, it doesn't help too much if you happen to live in Victoria. It appears only HP and Rectron (a top-end video product) could be sourced in Victoria. As your magazine is an Australian magazine, surely you should be attempting to include more products from other states. I realise it is much more difficult, however, on the assumption that sales in Sydney account for 50% of your circulation, then the value of the article is significantly reduced to half your readers.

Even if the information for other states was available on your Web site, it would at least help. The article is basically to assist readers in buying an appropriate PC within a price range, and it doesn't achieve that purpose if you live somewhere other than Sydney.

**Bob Andrew**  
Internet

*Thanks for your letter. You may be interested to know that we go to a lot of trouble to get vendors to send systems in for review. We would be thrilled to get PC builders from Victoria*

*to send in systems to us, but we get a considerable number of knockbacks each time we send out requests for review systems, from big and small companies alike. Whether it's because our PC testing is a little bit too rigorously for some vendors, I don't know. It may be that some vendors don't like the fact that we request systems to specifications that we think readers would like, rather than simply accepting what vendors would prefer we tested.*

*As we've done in the past, I'll send out an open invitation again. If you're a PC vendor in any state of Australia, or even New Zealand for that matter, and you're interested in submitting PCs for review, please contact us at [pcuser@pcuser.com.au](mailto:pcuser@pcuser.com.au). We'll include you in our database and let you know about future 'Best-value PC' or 'PC mega test' features.*

*As it is, my understanding is that most of the vendors that participate in our PC features will ship systems around Australia — you only have to ask them.*

— **Darren Yates**

## AD INDEX

Acer	2, 3
ACO	132
Adobe	13
Altech Computers	140
Anyware	
Computer Accessories	131, 133
ASUS	5
ATI	126, 127
Big Ben	130
Canon	— OBC
Corporate Software	128, 129
Creative Labs	— IBC
Dodo	29
EmailLife	25
Epson	19, 23, 57, 85
Esselte	31
Fujitsu	11
Government	15
HP	37
Inventa	141
Keyland Associates	138
LaCie	—
Linksys	21
MicroGram	137
Mitsubishi Electric	53
National Australia Bank	17
Netcomm	41
Netcomp	59
Netgear	33
Optus	— IFC, 1
OTC Computer	136, 139
Pioneer Computers	61
Rectron	142
Region 4	51
Shuttle	43
TEG Computers	134, 135
TPG Internet	63
Transend	27
Universal Enterprises	117
Verbatim	39

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CISCO SYSTEMS



# Big on looks

The *PC User* team tests the latest hardware and software, including a 5MP digital camera with some stunning features.

## OUR PRICES

The prices provided in *PC User's* product reviews are generally recommended retail, but because actual pricing is often significantly less, we've tried to use online retail prices whenever possible. The prices were accurate, as supplied by vendors or as advertised on Australian retail Web sites, as of mid July. Note that prices change rapidly and can vary significantly between retailers, so we strongly recommend shopping around yourself. Start with Web sites such as [www.hlt.com.au](http://www.hlt.com.au), [www.corpsoft.com.au](http://www.corpsoft.com.au), [www.staticide.com.au](http://www.staticide.com.au) and even an Australian search of [www.google.com.au](http://www.google.com.au). Remember to check out the delivery fees and other charges.

## Panasonic DMC-FZ5

With optical resolutions and pixel counts on the climb and prices continuing their freefall, digital still cameras are improving at a rate of knots. That's made abundantly clear by Panasonic's new DMC-FZ5.

Packing in a 12X optical zoom Leica lens with a big 5MP CCD sensor, the DMC-FZ5 still manages to maintain a compact styling. There's a pop-up flash and an electronic through-the-lens viewfinder in addition to the 1.8in LCD screen and a SecureDigital (SD) flash memory slot. Panasonic gives you a 16MB SD card, but with 1GB cards selling for little more than \$110 these days, there'll be no more excuses for missing your favourite shots.

Panasonic's Optical Image Stabiliser will steady any wobbly handwork, and you can capture images at maximum zoom at

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Lilou battery



lower shutter speeds and still get excellent shots. The image quality of this unit was impressive in our tests, and while the lighting was generally excellent, images were just a touch soft in our opinion. However, there's no denying the pulling power of that 12X optical zoom lens and its 36 to 432mm 35mm-equivalent range. The detail you can pull in is the sort of thing you would have needed an expensive telephoto lens for not many moons ago.

One feature we weren't so keen on was the proprietary Lithium Ion (Lilou)

rechargeable battery. It's great for convenience, but if it goes flat while you're on the road, you'll need a spare on hand. There's no going to the local supermarket for replacement batteries for this camera.

Panasonic has the retail price on the DMC-FZ5 at \$879, but the excellent DMC-FZ20 has the same megapixel count and optical zoom (but we think better image quality) and is now down to just \$989. It might be worth looking at the latter if you're after something a little more serious.

As it is, for a compact camera, the DMC-FZ5 is definitely an upward move from the old DMC-FZ3, but take a look at the DMC-FZ20 first.

— Darren Yates



## MSI MEGA mPC 800K

MSI's latest addition to its small form factor (SFF) PC range is the Athlon 64 Socket 754-based mPC 800K. It's a system that has a vaguely retro, almost '80s look, with an all-black gloss finish and a red accent around a front panel that is itself divided into modular squares. The inside is roomy and easy to access by lifting out the drive bays. The mPC was surprisingly trouble-free to install hardware into during our testing — the drives require no screws and there is a simple locking mechanism for add-on cards. A soft eject is used for the optical drive, which works most of the time, but still had a few inexplicable failures at certain points. The mPC 800K uses VIA's K8M800 chipset,

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and we mentioned, the system only supports the older Socket 754 Athlon 64/Sempron CPUs. This does limit your upgrade options somewhat, but there's still plenty of performance to be had from Socket 754 CPUs.

In our testing, we used DDR400 memory, but the system would only run it at DDR333. Even after setting the memory speed manually in the BIOS, we still could not get it to run at DDR400. Its performance was alright, with Business

Winstone scoring 34.8 using an Athlon 64 3200+. This is a better result than the previous MSI SFF PC we tested, which used a 3.4GHz Pentium 4 CPU. The onboard S3 graphics had real trouble with 3D our gaming tests, and *Unreal Tournament 2003* averaged only 15.9 frames per second (fps) at 1,024 by 768. That said, there is an AGP slot if you want to add in a more powerful graphics card. The mPC 800 K was also very quiet



for a SFF PC. This is a decent system at a good price.

— Nick Maillath

## TEST RESULTS

VeriTest Business Winstone 2002	34.8
VeriTest Multimedia Content Creation Winstone 2003	Did not finish
Unreal tournament 2003 (1,024 by 768) average/low fps	15.9/4.5
Tested with an AMD Athlon 64 3200+ processor, integrated VIA/S3 graphics, 1GB DDR RAM and a 40GB Western Digital hard drive.	

## Acer TravelMate 3002WTCi

Things have been heating up in the ultraportable notebook market recently, and Acer has enthusiastically joined the fray with its new sub-1.5kg TravelMate 3002WTCi.

Ultimately though, we were a bit disappointed with certain features of this notebook, not the least of which was the battery life. While Acer claims it can give up to 6.5 hours, thanks to two bundled Lilon rechargeable batteries, we were only able to gain 1 hour 39 minutes in full-performance mode (no power management) from the default 2000mAh battery. We estimate you'd be able to get another 4 hours from the second larger 4800mAh battery, but this means carrying it around too. The other feature we weren't all that keen on was the external optical drive. Being external was bad enough, given

that Dell's equally tiny Inspiron 700m features an integrated optical drive, but the fact that Acer only gives you a CD-RW/DVD-ROM combo drive doesn't go down well. We've reviewed full-sized Acer notebooks in the past, which have included DVD burners for \$1,699.

In terms of performance, it did pretty well, with an office benchmark score that would keep most 3GHz plus Pentium 4 desktop systems on their toes. While you can forget 3D gaming (5.5fps at 640 by 480 pixels on DOOM 3 isn't playable), the 12.1in 1,280 by 800-pixel resolution is ideal for DVD movies. The 60GB IDE hard drive is one of the fastest we've tested, with an average data transfer speed of 6,840KB per

second. You've also got two wireless networking options onboard, with Intel's own 802.11b/g Wi-Fi networking and built-in Bluetooth to connect to your mobile phone. There's even a multifunction flash memory reader on the right-hand side, along with the usual fast Ethernet and V.92 modem. All up, the TravelMate 3002WTCi

has some great features, but poor battery life and no DVD burning for \$2,899 stick in the craw a bit. Otherwise, this is a reasonable unit.

— Darren Yates



**7.5** Price: \$2,899  
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+ Excellent performance  
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— Poor battery life

### TEST RESULTS

VeriTest Business Winstone 2002	31.8
VeriTest Business Disk WinMark 99	6,840KB/s
VeriTest BatteryMark 4.01	1 hour 39 minutes
DOOM 3 timdemo at 640 by 480 pixels	5.5fps

## Toshiba Qosmio G20

The Toshiba Qosmio is a full-featured media centre PC that has somehow been squeezed into a notebook shell, although because it tips the scales at a little over 4.3kg and a battery life of just 55 minutes with all power management off, it doesn't really qualify as portable. Its features rival that of any desktop media centre PC with a ripping 2GHz Pentium M CPU, 1,024MB of RAM, GeForce Go 6600 graphics, a 17in widescreen display, two 80GB hard drives and even a built-in TV tuner.

There are plenty of other little things that enhance the media experience, such as the rotary volume knob, media

playback remote control, component video out and Harmon/Kardon speakers. The G20's screen is very bright when using mains power and still remains decent, even when using the battery power-saving mode. It has good viewing angles and is fast enough to display high-motion video without any trouble. The two integrated 80GB hard drives will give you plenty of room to store all your media, too.

The G20 packs a fair-sized punch when it comes to performance, too. It averaged a respectable 63.8fps in DOOM 3 at 1,024 by 768. Our business and multimedia

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30 70 Web: www  
.isd.toshiba.com  
.au + Packed with  
features + Can  
be used for  
gaming — Expensive



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benchmarks encountered a few problems with this system due to incompatibilities with Windows XP Media Center Edition. However, judging from the gaming scores alone, we think it'd be safe to say that the

G20 will be able to handle any office application or encoding task set before it with gusto, especially given its high-spec hardware.

The Qosmio's one real flaw is price — all these goodies come

at a pretty hefty cost. However, if you're after the best of the best in multimedia notebooks, and you're willing to pay a very pretty penny for it, the G20 is well worth considering.

— Nick Malith

## TEST RESULTS

VeriTest Business Winstone 2002	Did not finish
VeriTest Multimedia Content Creation Winstone 2003	Did not finish
VeriTest BatteryMark 4.01	55 minutes
DOOM 3 timedemo demo1 (1,024 by 768) average fps	63.8

## D-Link AirPlus G DWL-G730AP

The G DWL-G730AP is the Swiss army knife of wireless networking gizmos. Small enough to easily fit in a shirt pocket, it has three wireless 802.11g LAN modes to suit all occasions: it can act as a client, access point or router. Selecting a mode is as easy as flicking a switch on the bottom. It also has a single RJ45 Ethernet port for connection to a local area network. In client mode, it connects a single computer to a wireless LAN.

A bundled Ethernet cable provides the wired connection from the computer to the device. In access point mode, the Ethernet connection is

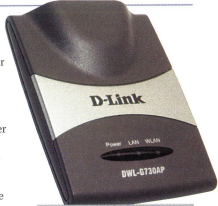
plugged into a hub on a wired LAN. The DWL-G730AP then provides wireless connections to the LAN for multiple computers.

In router mode, the Ethernet port is cabled to a broadband modem. It has the usual router features, including PPPoE login clients for connection to broadband ISPs and a firewall. NAT shares a single connection with multiple computers and a DHCP server allocates IP addresses. However, all LAN connections are wireless, as there are no spare Ethernet ports for a wired LAN.

The DWL-G730AP's wireless performance was very good.

During testing, we saw similar signal strength and data throughput to a desktop wireless access point. The device can be powered via a plug pack, or from a computer via a short cable with a USB plug at one end and a coaxial power plug at the other. A zippered pouch keeps all the bits and pieces together while travelling. However, it lacks a bridge mode, and can't wirelessly connect dumb devices such as printers.

The multipurpose DWL-G730AP will solve many problems for travellers, presenters and network administrators. LAN technicians



**8** Price: \$149 Contact: D-Link Phone: 1300 766 868 Web: www.dlink.com.au + Compact and easy to carry + Multifunctional — No bridge mode

will find it an indispensable troubleshooting tool.

— John Hepworth

## Sony ACID Pro 5

For some years now, ACID Pro has been the premiere composing and mixing tool for loop- and sample-based music creation, remixes and DJ sequencing. The ACID loop format has actually become the default standard for this style of music creation.

While great at what it first set out to be, ACID has never been a fully featured music production tool. This latest release goes further towards making ACID a comprehensive music production tool.

Like its stablemate Vegas, ACID now includes a very powerful media manager for

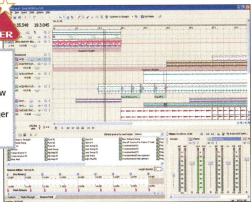
handling all your samples, including the 1,000 plus provided with the package. This makes finding what you need much easier. Nested folders are now supported for managing larger projects, plus bus-to-bus routing for complex mixes and effect send paths. Simple things like reversing a clip directly in the timeline, and dropping in loops during playback for live mixing are now possible. A metronome has also been added to better match prerecorded tracks when doing a remix, for example.

The MIDI side is gradually getting there with new Groove

**9** Price: \$439 Contact: New Magic Phone: (02) 9528 4555 Web: www.sonymediasoftware.com + Excellent media manager + ReWire support — MIDI features still maturing

Mapping quantisation, ReWire support for ACID to be a host or an instrument, VST effects finally supported and, most importantly perhaps, a MIDI piano roll editor.

Aside from the wealth of loops and samples provided,



you also get a copy of Sony Audio Studio for editing, wav files, and three great VSTi softsynths from Native Instruments.

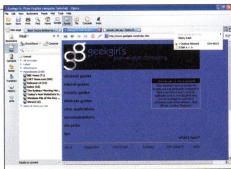
— Philip Moore

## Opera 8

Most companies give their browsers away, so are there any compelling reasons why you should fork out around \$50 to use Opera 8, or put up with ads in the free version? Perhaps one:

security. Opera's unique browser engine and its lack of popularity make it notably less prone to attacks than any of its competitors. Version 8 also helps identify phishing attempts by marking and rating encrypted pages. If you want more than

**8** Price: US\$39 Web: www.opera.com + Excellent RSS support + Stuffed with features — Flawed JavaScript support





security, there's plenty that's appealing about Opera 8, but little that is compelling. This new version cleans up the overly cluttered interface of previous releases, but is still busy enough to be disconcerting to beginners. Its RSS support is the best of any browser. The handy garbage bin icon at the end of the address bar lets you open any recently closed pages. Its HotClick feature lets you double-click any word to get a

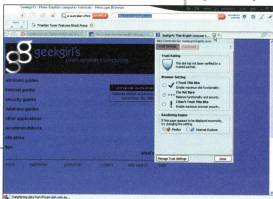
pop-up menu full of options, including translation and audio pronunciation. It lets you zoom in on pages and also lets you stretch and shrink pages without losing any content. On the downside, its JavaScript support is flawed, it has flaky PDF support and it opens all windows within the one container, making things very crowded.

So, Opera for \$50 or Firefox for nothing? Firefox gets my vote, but I'm happy to have the

advertising-supported version of Opera on my PC.

— Rose Vines

**6** Price: Free Web: <http://browser.netscape.com/ns8/>  
+ Choice of browsing engines — Poorly designed interface — Laughable RSS support



## Netscape 8

AOL's marketing philosophy seems to be 'pander to the lowest common denominator'. In Netscape 8's case, that approach unfortunately sabotages what would otherwise be a pretty decent browser.

For example, take its RSS support. It absorbs huge amounts of screen real estate

and is horribly implemented, but oh my, it looks so cute. On the other hand, Netscape's ability to use both the Internet Explorer and the Firefox/Mozilla Gecko browsing engines makes it the most compatible, most flexible of all browsers. What a contrast in dumb and brilliant.

More contrasts include the menus, which are shunted up into the title bar, giving you a complete row of extra space for browsing. That's a great idea,

except the toolbars beneath are so capacious, they chew up all that space. The window controls are so close to the Security Center controls, you're bound to end up clicking the wrong one at some time.

Solid features such as tabbed browsing, customisable pop-up blocking and extensive form-

filling tools are counterbalanced by so-called 'localisation' features, which work only with US zip codes. It also offers easily accessible and extensive security controls, but it has the impertinence to add its own set of sites to the 'Trusted Sites' list — a real no-no.

— Rose Vines

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# Media centre PCs

**After a PC to sit alongside your TV?**  
**Darren Yates tests the latest media centre systems.**

**H**ome theatre is grabbing consumers by storm, yet the days of DVD's rule in the lounge room may be coming to an end as digital TV and high-definition (HD) disc formats set to stake their claim. We sent out the call to PC vendors large and small this month, asking them to send in their best-value media centre PCs. To qualify, these systems

need to be capable of handling everything you'd need in a PC that's designed to sit at the centre of a home entertainment system.

We gave the vendors no price limit and no further instructions, but to a unit, they all supplied systems with Microsoft's Windows XP Media Center Edition (MCE) operating system.

## What else we found

Despite Microsoft's continued failed support of Australian high-definition digital TV with this operating system, all bar one of our systems this month featured at least one digital TV tuner card.

While the first round of MCE systems earlier this year lacked sufficient storage, this time around we've seen considerable improvement, with one PC packing in a cool half-terabyte (500GB) of hard disk space.

Some vendors went to the trouble of offering classy-looking cases, but sadly, these often came at the expense of system performance, typically in the 3D gaming department.

Given the pricing of these systems ranged between \$1,599 and \$3,099 (with the majority well over \$2,500), it was difficult to be disappointed with the overall value on offer when compared with some of the systems we saw in last month's

PC mega test (see *PC User* August, page 28).

Clearly, some vendors consider 3D gaming an optional extra for some consumers. This may well be appropriate in some cases, but it's important that you don't assume 'home theatre' means guaranteed gaming speed.

Other systems sacrificed styling for the sake of performance. The problem with this is that you end up with an ugly computer box smack-bang in the middle of your lounge room. Judging from what we saw, the perfect home theatre PC appears to be some way off, but at least some improvements have been made.

## PC eXpress Phoenix 1060A

Local vendor PC eXpress tore up the competition in our PC mega test last month and has carried its form into this roundup as well. The Phoenix 1060A was not only one of the cheaper models we tested, but it was also clearly the best, with excellent all-round performance. It was the only system to crack the 60 mark on our multimedia content creation benchmark and the only one to go past 100 frames per second (fps) on *DOOM 3* at 1,024 by 768-pixel resolution. This result is thanks to a GeForce 6800 GT graphics card, the most potent we saw for the feature. There's not much else missing in this system either, packing dual LG optical

drives, including the GSA-4163B 16x DVD burner with double-layer burning support.

There's hard disk space to burn in the form of two 200GB Western Digital drives. Although we saw more space in the Marvel Media Centre 3400i, the Phoenix 1060A still took the lead for speed.

This unit also featured a 19in Mitsubishi DV997FD CRT monitor and, after our roundup of monitors on page 48, we think this is a smart move. Too many LCD monitors are great for personal, direct-in-front use, but very few have the viewing angles to allow others to watch movies with you. And that's where CRT monitors still reign

supreme. Their higher resolutions and superior viewing angles make them the best choice for 3D gaming and DVD movies.

If there is a feature lacking here, it's FireWire, but it's nothing a \$35 PCI expansion card can't fix. All up, while we wouldn't call this the perfect system to act as a home entertainment PC, it is the only one we think will truly handle everything from games to movies.



Price: \$2,550 Contact: PC eXpress Phone: (02) 9584 0567 Web: [www.pc-express.com.au](http://www.pc-express.com.au) + Digital TV tuner card + Excellent performance + Excellent storage



## Marvel Computers Media Centre 3400i

Marvel Computers was one of the few vendors to include an Intel Pentium 4 processor this month, and it managed to put together a pretty impressive system. It's built around the new 3.4GHz Pentium 4 551 with Intel's EM64T 64-bit processing (by contrast, the 550 has the

same 1MB of L2 cache, but no EM64T; the 650 has 2MB). We carried out specific video encoding tests on all of the systems we tested this month, and found that thanks to its CPU, this one was the fastest of the lot.

It packed in half a terabyte

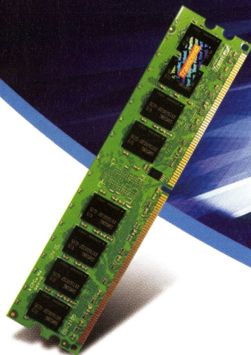
(500GB) of hard disk space as well as the excellent Pioneer DVR-109 DVD burner for what were the best storage specs in the roundup. Kworld's V-Stream DVB-T PCI digital TV card allows for HDTV capture and playback, and you've got FireWire ports built in to

capture stuff from your digital video camera.

Its overall multimedia performance was great and on a par with the Acer Aspire T630, but with vastly improved 3D gaming. This was mostly thanks to Nvidia's GeForce 6600 GT graphics card, which

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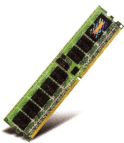
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performed well on both *DOOM 3* and *Splinter Cell Chaos Theory* (SCCT).

Phillips's 19in 190B6 LCD monitor is fine for personal use, but again, after our roundup of monitors this month, we

wouldn't recommend most LCD monitors for home theatre use.

All up, Marvel's Media Centre 3400i is a very good all-round system and well worth a look, despite the hefty price tag.

**8.5** Price: \$2,795 Contact: Marvel Computers Phone: (02) 9680 9688 Web: www.marvelcomputers.com.au + 500GB of storage + Good 3D gaming + Pioneer DVD burner



## TI Computers Media Center 1000

**7.5** Price: \$1,599 Contact: TI Computers Phone: (02) 9437 5437 Web: www.ticomputers.com.au + Cheapest complete system + Digital TV tuner - No 3D graphics card



The TI Computers Media Center 1000 was the only complete system we saw for under \$2,000, matching its compact styling with an equally compact price tag of just \$1,599.

But along with that low price tag comes a correspondingly lower set of features. That said, it's still pretty decent value if your budget won't stretch beyond the \$1,600 mark.

The first glaring omission is 3D graphics. TI went for the integrated UniChrome II graphics solution onboard the Gigabyte GA-K8VM800 VIA-chipset motherboard. Because of this, we couldn't even get *DOOM 3* to load, let alone run.

While you still get 1GB of DDR400 memory, AMD's Athlon 64 3000+ processor and a single 200GB Maxtor hard drive are components with less value than you see elsewhere,

although still not too bad when compared with other systems at nearly double the price. The most amazing thing is that you still get a digital TV tuner card and the Microsoft Windows XP MCE operating system.

This isn't the fastest system under the sun, but for \$1,599, you'll be hard pressed to find any other system to compete at this price.

## OTHER MEDIA CENTRE PCs TESTED

### Emagen Avexe 1200



**7** Price: \$1,700 Contact: Emagen Phone: 1300 880 070 Web: www.emagen.com.au + Dual HDTV cards + 400GB hard drive space - No monitor

Local vendor Emagen went the budget route with their media centre PC, but apart from the glaring lack of a monitor, the Avexe 1200 offers some pretty good value.

It matches the TI Computers Media Centre 1000 with AMD's Athlon 64 3000+ processor, but was the only system in the roundup to offer only 512MB of memory. However, when you consider the \$1,700 price tag, Emagen has done pretty well.

This is a system aimed at those who watch TV and are quite happy with their PlayStation 2 or Xbox to play games, as there's no real 3D graphics capability in this box.

Packing in 400GB of RAID 0 storage in the form of two 200GB Seagate Serial ATA hard drives and the addition of Pioneer's DVR-109 double-layer DVD burner is one of the system's high points.

The standout feature, however, is the use of dual Ultraview DVB-T HDTV tuner cards. These were originally made by DVICO and are very good cards. With two, you can capture one HDTV channel while you watch another.

However, the underlying problem here is the lack of processing oomph. The Athlon 64 3000+ is a fair chip, but it doesn't really fly. The disk speed achieved in our tests from the RAID 0 array is also well below what we usually find.

If your budget won't reach to the \$2,500 plus level of most of these other systems, the Avexe 1200 is not a bad option.

### PCQUEST Cinevue

Local vendor PCQUEST produced a solid system for this roundup. The use of a stylish, if somewhat expensive, case also gave it the Cinevue the right look. The SilverStone



**7** Price: \$2,800 Contact: PCQUEST Phone: 1300 550 118 Web: www.pcquest.com.au + High-quality SilverStone case + Digital TV tuner card - Pricey

Lascala-series piano black desktop case gives this system a definite hi-fi look, but it adds around \$250 to \$300 to the cost by the time you add in a power supply (the case doesn't come with one).

Under the bonnet is a good assortment of components — they were all just slightly off the pace of the top two systems. AMD's Athlon 64 3500+ turned in a creditable performance across our benchmarks, but it's worth noting that the AMD Athlon 64 is not as fast at video encoding as an equivalent Intel Pentium 4. The 250GB Maxtor hard drive is roomy, but it's not the 400GB or 500GB offered by the leading systems. LG's GS4-4163B DVD burner is a smart

low-cost option, but the XpertVision non-GT GeForce 6600 is a real weak point. Its performance, particularly on SCCT, doesn't bode well for future 3D gaming. That said, it did better than most.

BenQ's widescreen LCD monitor is a neat option, but you'll need to carefully check its viewing angles if you indeed intend to put this PC to home theatre use.

Hauppauge's WinTV-NOVA-T-MCE brings digital TV (unofficially) to Windows XP MCE. At \$2,800 though, this is one of the more expensive systems we tested.

There's no doubting the case gives this one a real edge in looks, but possibly at the cost of some features inside.

### Rectron CMATCS-81915GMF-3200MCE

We thought about taking a point off the score for this Rectron system just for the long, meaningless name, but as it is, the CMATCS (as we'll call it) has a reasonable mix of features if again, at a somewhat inflated price tag. It combines the



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original 3.2GHz Pentium 4 540 processor with 1GB of memory and a competent list of features. However it's a sign of the times when the 200GB Western Digital hard drive was the smallest we saw in this roundup. And for the \$2,888 price tag, these specs aren't great value.

Dual Gigabyte optical drives, including the GO-W1616B double-layer burner, make it a rare system, while Kworld's V-Stream DVB-T digital TV tuner card gets another run. Remarkably, its 3D graphics performance with its GeForce 6600 card was within a whisker of PCQUEST's Cinevue with the same chip, showing that the Athlon 64 3500+ and Pentium 4

540 are pretty close in terms of performance.

All up, it's a creditable system that covers all the bases, but again, the price hurts.



**Price: \$2,888** Contact: Rectron Phone: (03) 9561 6166 Web: www.rectron.com.au + Dual optical drives + Steady performance – Very expensive

## Acer Aspire T630

You have to give Acer marks for

even turning up to this feature — it's more than other big-name brands attempted. As such if you're after a big-name system that's ready to capture TV straight out of the box, this is one we can suggest. However, the fact that Microsoft continues to not officially support Australian digital TV in its Windows XP MCE operating system leaves the big-name brands between a rock and a hard place. Here, it forces Acer to stick with analog TV tuner cards. Acer has included dual cards, which adds a little in value, but given the \$3,099 price tag and no digital TV reception, it doesn't rate all that highly on the value Richter scale.

The overall performance of the Aspire T630 was actually pretty good, particularly on multimedia applications, but you wouldn't say its games speed was worth much, even with a Radeon X600 Pro graphics card.



**Price: \$3,099** Contact: Acer Phone: 1300 559 024 Web: www.acer.com.au + Good overall performance – Analog TV tuner cards – Very expensive

### BEST-VALUE MEDIA CENTRE PCs: HOW THEY COMPARE

Model	PC xPress Phoenix 1060A	Marvel Computers Media Centre 3400i	TI Computers Media Center 1000	Emagen Avexa 1200	PCQUEST Cinevue	Rectron CMATCS-81915GMF-3200MCE	Acer Aspire T630
Price	\$2,550	\$2,795	\$1,599	\$1,700	\$2,800	\$2,888	\$3,099
<b>SPECIFICATIONS</b>							
Processor	AMD Athlon 64 3800+	Intel Pentium 4 551 3.4GHz	AMD Athlon 64 3000+	AMD Athlon 64 3000+	AMD Athlon 64 3500+	Intel Pentium 4 540 3.2GHz	Intel Pentium 4 650 3.4GHz
Memory	1GB DDR400	1GB DDR2-533	1GB DDR400	512MB DDR400	1GB DDR400	1GB DDR400	1GB DDR400
Motherboard	ASUS A8N-E	ASUS P5AD2-E Deluxe	Gigabyte GA-K8VM800M	MSI RX480M2-IL	ABIT AN8 Ultra	Gigabyte GA-8I915GMF	Acer OEM
Graphics card	Nvidia GeForce 6800GT 256MB PCI Express	Gigabyte GV-NX661T28V	Integrated UniChrome II	Integrated ATI Radeon Xpress 200 graphics	XpertVision GF 6600 128MB PCI Express	Leadtek WinFast PX6600 TD 256MB	Sapphire ATI Radeon X600 Pro 256MB
Graphics chip	Nvidia GeForce 6800 GT	Nvidia GeForce 6600 GT	N/A	As above	Nvidia GeForce 6600	Nvidia GeForce 6600	ATI Radeon X600 Pro
Hard disk drive	Two 200GB Western Digital WD200JD (RAID 0 configuration)	Two 250GB Seagate Barracuda SATA	200GB Maxtor SATA 7,200rpm	Two 200GB Seagate Barracuda SATA (RAID 0 configuration)	250GB Maxtor MaxLine II Plus	200GB Western Digital WD2000JD SATA	250GB Seagate Barracuda ST325082 SATA
Optical drive(s)	LG GDR-81638 DVD-ROM, LG GSA-41638 double-layer DVD burner	Pioneer DVR-109 double-layer DVD burner	LG GSA-41638 double-layer DVD burner	Pioneer DVR-109 double-layer DVD burner	LG GSA-41638 double-layer DVD burner	Gigabyte 16x DVD-ROM, 16x double-layer DVD burner	16x double-layer DVD burner (OEM)
Monitor	19in Mitsubishi DV997FDB flat CRT	19in Philips 190B6 8ms TFT LCD	17in BenQ FP71E + TFT LCD (8ms)	No monitor	BenQ FP71W widescreen LCD	19in Gigabyte TFT LCD	Acer AL1913w widescreen LCD
TV tuner card	ProLink PixelView PlayTV300 DVB-T	Kworld V-Stream DVB-T PCI	Videomate Compro DVB-T300	Ultraview dual DVB-T and HDTV tuner	Hauptpage NOVA-T-MCE PCI	Kworld V-Stream DVB-T PCI	Hauptpage PYR-500MCE
Operating system	Microsoft Windows XP Home	Microsoft Windows XP MCE	Microsoft Windows XP MCE	Microsoft Windows XP MCE	Microsoft Windows XP MCE	Microsoft Windows XP MCE	Microsoft Windows XP MCE
FireWire port included	No	Yes	No	Yes	No	Yes	Yes
<b>TEST RESULTS</b>							
VeriTest Business Winstone 2002	44.6	DNF**	35.1	32.9	38.6	32.1	39
VeriTest Multimedia Content Creation Winstone 2003	62.9	57.8	DNF**	42.8	DNB*	53.7	57.8
VeriTest Business Disk WinMark 99 (KB/s)	20400	7570	7870	5770	9940	4970	9740
UserBench Splinter Cell CT (1,024 by 768) average fps	88.8	53.62	DNB*	DNB*	29.25	29.25	DNB*
UserBench Splinter Cell CT (1,280 by 1,024) average fps	62.8	38.09	DNB*	DNB*	21.01	DNB	DNB*
UserBench DOOM 3 (1,024 by 768) average fps	104.4	78.4	DNB*	7.6	52.3	52	24.9
UserBench DOOM 3 (1,280 by 1,024) average fps	91.6	62.1	DNB*	4.9	34.7	34.6	16.1

\*\*DNF: did not finish. \*DNB: did not benchmark (see review). In all cases, higher scores are better.



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## PC User's Top Buys

**The PC User team  
selects the best-value  
products and PC  
specifications.**

**W**ant to buy a new PC? If you want to order a custom-built PC (or build your own) using only the best-value components available, this new regular column will help you make that choice.

Based on our latest Labs testing, we've selected the best-value specifications for three types of PC (see table below). We're not saying these are the best specs for everyone, but each component represents the best bang per buck at its particular price point. We encourage you to customise these specs further to suit your needs. For example, if you're not into 3D games, you can save money on the all-round home PC by ditching the graphics card and opting for a motherboard

with built-in graphics. Choosing a PC starts with the processor and motherboard. The truth is both Intel and AMD offer a good range of chips for any need, and even a budget processor like the AMD Sempron or Intel Celeron D is fine for most applications. We've chosen an AMD Athlon 64 3000+ or Intel Pentium 4 531 as the starting point here, because their compatible motherboards offer a better upgrade path in the future. The key to maximising this upgrade path is choosing the latest

processor socket format (the physical connection between the processor and motherboard): Socket 939 for AMD processors or LGA775 for Intel chips. Also important is the chipset (a pair of chips on the motherboard that controls many key functions). For example, if you want a dual-core Pentium D processor to hasten your video work, you'll need a board with one of Intel's 945 or 955 chipsets.

Other Top Buy products include:



### Pioneer DVR-109

**Price:** \$95 **Contact:** Pioneer Electronics **Phone:** 1300 666 383  
**Web:** [www.pioneeraus.com.au](http://www.pioneeraus.com.au)  
**Reviewed:** May 2005

A state-of-the-art burner for less than \$100! The DVR-109 boasts support for double-layer DVD burning for both major formats (DVD-R and DVD+R), the latest speeds and Pioneer's usual burn reliability. If you need basic video editing and burning software, the retail pack (DVR-A09XLA) costs around \$20 more.



### Compro VideoMate DVB-T300

**Price:** \$149 **Contact:** Anyware  
Computer Accessories **Phone:** (02)  
9879 5788 **Web:** <http://new.compro.com.tw/en/home.html> **Reviewed:**  
August 2005

A TV tuner with the lot, the DVB-T300 has a dual tuner, supporting both digital and analog TV, a remote from which you can turn the PC on and off, support for HDTV, BDA drivers for Windows XP Media Center Edition 2005, an internal audio connector and outstanding software for recording and time shifting.

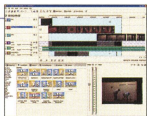


**i-mate JAM**

**Price:** \$910

**Contact:** i-mate  
**Phone:** 1300 850 513  
**Web:** [www.clubimate.com](http://www.clubimate.com)  
**Reviewed:** August 2005

Hands down the best-value smart phone available, the i-mate has a beautiful display and its smooth edges make it a joy to hold and use. It uses Windows Mobile 2003, comes with a 1.3-megapixel camera and SecureDigital expansion slot for extra memory or an optional Wi-Fi card.



**Sony Vegas Movie  
Studio + DVD**

**Price:** \$209 **Contact:** New  
Magic **Phone:** (02) 9528 4555  
**Web:** [www.sonymediasoftware.com](http://www.sonymediasoftware.com)  
**Reviewed:** July 2005

Want to edit your home movies? Vegas Movie Studio offers a great compromise between power and ease of use. It has a good selection of effects—even chroma key—and comes with DVD Architect Studio, an excellent program for putting your movies on DVD. At the price, it's unbeatable value.



**TI Computers TI AMD  
Game 3000 Pack**

**Price:** \$1,399 **Contact:** TI Computers **Phone:** (02) 9437 5437 **Web:** [www.ticomputers.com.au](http://www.ticomputers.com.au) **Reviewed:** August 2005

Trying to find a computer that matches our recommended all-round home PC? This TI Computers system is almost identical. The main difference is a 17in CRT monitor instead of our recommended 19in Acer model, but for under \$1,400, we'll forgive that. Great for games or making home movies, it's simply amazing value. 🍌

### BEST-VALUE PC SPECIFICATIONS

	All-round home PC	Performance game PC	Performance video editing PC
Processor	AMD Athlon 64 3000+ (Socket 939) or 3.0GHz Intel Pentium 4 531	AMD Athlon 64 3500+ (Socket 939)	Intel Pentium D 820 (2.8GHz)
Motherboard	For Athlon 64: Motherboard with Nvidia nforce2 chipset (such as Gigabyte's GA-K8NF-9). For Pentium 4: An LG4755 socket motherboard (such as Albatron's PX91SP Pro-G)	Motherboard with Nvidia nforce4 SLI chipset (such as the ASUS ABN-SLI) or Gigabyte GA-K8N Ultra-SLI	Motherboard with Intel 945 or 955 chipset (such as the ASUS P5LD2-1945F or Gigabyte GA-8945G-Pro)
Memory	512MB DDR400	1GB DDR400	1GB DDR2-533
Graphics card	Nvidia GeForce 6600 GT 128MB (such as the Xpertion GF 6600GT)	Two Nvidia GeForce 6600GT 128MB cards (SLI)	Cheapest possible (or motherboard with integrated graphics)
Hard disk drive	160GB Western Digital WD1600JD	250GB Western Digital WD2500JD	Two 250GB Western Digital WD2500JD (RAID 0)
DVD burner	Pioneer DVR-109	Pioneer DVR-109	Pioneer DVR-109
Monitor	Acer AC915 19in CRT	Acer AC915 19in CRT	Acer AC915 19in CRT
Approx price	\$1,500	\$2,200	\$1,900



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RangeMax

# RangeMax Wireless to the Max

Introducing NETGEAR **RangeMax**, NETGEAR's new range of wireless routers and adapters.

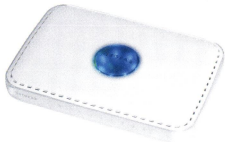
With wireless the hands-down favourite home networking solution, there's been just one problem: Staying connected in your home can be tricky, especially in the home's ever-expanding wireless environment.

To improve coverage, NETGEAR® developed RangeMax™ wireless networking products. The heart of the system is the RangeMax Wireless Router (WPN824): Its seven internal Smart Antennas, instead of the simple antenna typically found in routers, survey the environment continually, seeking the optimal mix of antennas to produce the strongest, most far-reaching coverage.

This active networking solution handles interference, signal reflections, and physical barriers—achieving superior range, coverage, and speed.

In fact, RangeMax provides up to 10 times the coverage and speed of 802.11g, achieving its best results toward the outer limits of the network. Now, you can achieve consistent wireless coverage 200 to 400 feet from the router in your home environment.

Faster, whole-home coverage is the future for networking and home entertainment—and NETGEAR RangeMax is bringing them home now.



NETGEAR® RangeMax™ Wireless Router (WPN824)

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- Dead spots banished with Smart MIMO (Multi-Input, Multi-Output) technology
- Compatibility ensured with past and future wireless standards - including 802.11b, 802.11g, and SuperG®—for up to 50% improvement on existing gear
- Entire line now available: RangeMax Wireless Router, USB 2.0 Adapter, PCI Card
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[www.netgear.com.au](http://www.netgear.com.au)

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ENTERTAINMENT ANYWHERE

# Music on the go

**Can't go anywhere without your music? Darren Yates puts 20 of the latest portable music players to the test.**

**P**ortable music players come in three basic flavours, based on their storage media: flash memory, micro-drive and hard disk drive.

Flash-based players are the lightest, most compact and also the most robust, and they're ideal for when you're at the gym.

You'll typically find these in capacities up to 1GB and many come with an FM receiver and voice recording features.

Micro-drive players are a compromise between the small size and storage of flash memory players and the higher capacity, less rugged hard drive players. These players provide from 4GB to 6GB of storage and often include line-in recording.

Hard drive players provide a minimum of 20GB of storage, but can go up to an enormous 80GB. They typically support uncompressed .wav file audio for best quality, but require care to prevent damage to the

internal hard drive.

Most players, regardless of their type, can double as storage devices, allowing you to transport files.

## What to look for

Ideally, any unit you choose should have a removable battery. Built-in Lithium Ion (LiIon) rechargeable batteries are all well and good until they no longer take a charge. Also, be wary of vendors that charge you a substantial fee to change the battery for you.

Perhaps the most important feature in a music player is audio quality, which is why

we've gone to great lengths to test the audio quality (see 'How we tested' on page 36).

We also recommend you look for a device that works natively with Windows Explorer and doesn't tie your player down with management software.

In general, drive-based players offer better audio quality than the flash-based models, but there are exceptions to that rule. While we did see one or two models that are best turned into landfill, there are also some cracking new models that will surprise you. In short, portable music never sounded so good.

## FLASH PLAYERS

### Creative MuVo TX FM

Flash-based MP3 players are just about everywhere these days, yet finding a good one is not as easy as it might seem. However, the MuVo TX FM is a clear cut above the crowd. Its 1GB of storage for \$249 is damn good going, but when you consider it also features an LCD, can act as a USB memory drive, has an onboard FM receiver and handles voice recording, it's a pretty amazing little package.



**Price:** \$249 (1GB) **Contact:** Creative Labs **Phone:** (02) 9021 9800 **Web:** [www.au.creative.com](http://www.au.creative.com) + Good audio quality + Removable battery + Tons of features



It's also powered by a removable AAA battery. Audio quality was well above average, with Total Harmonic Distortion (THD) just 0.022% at 1kHz with 30kHz filtering. Its A-weighted signal-to-noise ratio (SNR) of 88.2dB is not bad. The maximum output level of 391mV RMS is a little low, but it should still work nicely when plugged into your

stereo system. It boasts the rare feature of uncompressed high-quality .wav support, along with MP3 and WMA formats, giving you the best of both worlds. And with its tiny 43g weight, you won't notice you're carrying it. It shows up as external storage under Windows Explorer, so you just copy your song files across and you're set. All up, the MuVo

TX FM has features to burn — storage, audio quality and a removable battery — at a pretty decent price too. We think this is the best flash player in this feature. As good as it is though, we'd still suggest you check out the new Zen Neeon first (see page 40). An extra \$50 gets you 5GB of space in a tiny package.

### Creative MuVo Mix

The new 512MB MuVo Mix plugs straight into your USB port and appears as a storage drive under Windows Explorer. Another plus is the removable AAA-size battery and again, we'd suggest using a NiMH rechargeable. In terms of audio quality, the Mix gave good results all round, with THD

levels of just 0.022% at 1kHz with 30kHz filtering. The controls are simple to use and the main control unit separates from the rest of the casework to double as a 512MB flash memory drive. Although there's no LCD, no FM radio and no voice recording, the removable battery and low THD figures make this one a winner. The MuVo TX FM may be better

all-round value with its extra features and double the storage for just an extra \$100, but if the budget won't stretch that far, the MuVo Mix is a good, simple player with the right mix of storage, audio quality and price.



**Price:** \$149 (512MB) **Contact:** Creative Labs **Phone:** (02) 9021 9800 **Web:** [www.au.creative.com](http://www.au.creative.com) + Removable battery + Very good audio quality — No LCD screen

### Linnphir L117 MP3 Player



**Price:** \$89 (256MB) **Contact:** Linnphir **Phone:** (02) 9211 0478 **Web:** [www.linnphir.com.au](http://www.linnphir.com.au) + Good audio quality + Compact design — Average earphone quality



If you're after a bargain player that still has reasonable audio quality, the L117 is a little ripper. Priced at just \$89, it's one of the smallest players we've seen, yet



it still manages to include voice recording and an FM receiver. You get an idea of how small this player is when you realise that it's also powered by a single removable AAA battery. It comes with a blacklit LCD, works

directly under Windows Explorer and even supports uncompressed .wav files. Audio quality was pretty damn good, with just 0.13% flat-response THD levels across the board. However, the 30kHz filter THD

levels of just 0.01% make this equal to the best players in this feature. Unfortunately, the SNR results don't quite match and the earphones could use some help, but there's still plenty of potential in this one. Overall,

the price is pretty amazing given how much you're getting. We can't vouch for its longevity in terms of build quality, but it's definitely a must-see if your music habit doesn't match your wallet.

### Lexar Digital Music Player LDP-600

The LDP-600 is unusual in that it comes with a built-in FM stereo transmitter. This means that if your car doesn't have a CD player, you can still get good-quality music through the FM radio. With the transmitter switched off, audio quality through the headphone output was generally passable, with THD figures around 0.08% with filtering. Its SNR of 93.1dB (A-weighted) is surprisingly good. The unit requires connection via a USB cable and also has a built-in Lilon battery. On the upside, you also get an FM receiver and excellent-quality Sennheiser earphones. All up, the FM transmitter option makes this worth a look, but at \$189 for the 256MB model, it's by no means the best-value flash-based player around.

### MSI Mega Player 521

If you're the sporty type, the Mega Player 521 might be just what you're after. Apart from being a decent player, it offers a couple of unique features, including a pedometer and stopwatch. It also has an FM radio, onboard voice recording and good earphones. The display is an OLED (organic light-emitting diode) type, which looks smarter than basic LCD, but we think that's undone by the unit's integrated Lilon rechargeable battery. Audio quality was good, with low 0.012% THD at 1kHz with 30kHz filtering, but unfortunately, this



**7** Price: \$189 (256MB)  
Contact: Lexar Phone: (02) 9034 8625 Web: www.lexar.com.au + Built-in FM transmitter + Memory expansion - Low storage

is another player that will clip the audio if you pump up the volume too high. The maximum output level is also very low. The Mega Player 521 comes with an armband holder, so if you're a gym junkie, the extra features make it well worth a look.

### MSI Mega Player 522BT

The other flash player we received from MSI this month was the unusual Mega Player 522BT. It's one of the largest flash players we've ever seen, but in addition to its size-consuming SecureDigital expansion slot, it also comes with onboard Bluetooth. The idea here is that it allows you to use the 522BT to answer your phone calls from your mobile phone at a distance of up to 10m. You use the player's microphone and headset without actually being wired to the phone. It's an unusual feature, but unfortunately, the player is almost the size of most phones. Audio quality was pretty decent, with THD levels at 1kHz with 30kHz filtering measuring just 0.013%, although its SNR ratings weren't so good. The player has an onboard

FM receiver and voice recording, but it also has a built-in Lilon battery. MSI rates the battery for a maximum of 12 hours of playback, which can only be reduced greatly with use of Bluetooth. The 522BT is an interesting concept, but one that may prove redundant.

### Pioneer DreamVision MP318

The DreamVision MP318 is one of a breed of chunkier-style players, and it's a model that offers a good features list. Unfortunately, it suffers from clipping distortion. That's a pity because fundamentally, it's not a bad player, with low THD levels of just 0.013% at 1kHz with 30kHz filtering, and its 94.5dB A-weighted SNR is as good as you'll find. But when the THD levels at maximum output can push past 10%, it's not good. There are plenty of features onboard, including an FM receiver, line-in and voice recording, and power is provided by a removable AAA battery. Earphone quality wasn't too bad, producing reasonably balanced audio, but lacking the extreme lows and highs found



**7** Price: \$310 (256MB) Contact: MSI Computer Australia Phone: (02) 9748 0070 Web: www.msicomputer.com.au + SD memory expansion slot + Bluetooth - Built-in battery

in Apple and Sennheiser models. Unfortunately, priced at \$159 for just 256MB, we think you're paying just a little too much for those extra features.

### Apacer Audio Steno AB320

The AB320 is one of the many brochure-style MP3 players coming

out of Taiwan. While it's more about style than substance, it still offers passable audio quality. Despite its small size, it has an FM radio and voice recording functions. The 128 by 64-pixel blue-backlit LCD is functional, but just a tad dark. Power is provided via a single AAA battery, and it even supports .wav files in addition to the regular MP3 and WMA formats. The audio quality here—0.012% THD at 1kHz with 30kHz filtering—is one of the better results you'll find, but that's tempered by comparatively low SNR figures, low-quality earphones and low maximum output levels. The lack of storage is also a serious drawback. The distributor, BlueChip Infotech, had no pricing on this unit at time of publishing.



**7** Price: \$159 (256MB) Contact: Pioneer Computers Australia Phone: (02) 9690 2888 Web: www.pioneercomputers.com.au + Lots of features - Can't handle full-scale digital audio - Expensive

**6.5** Price: TBA (128MB) Contact: BlueChip Infotech Phone: 1300 727 474 Web: www.apacer.com + AAA-battery power + Passable audio quality - Horrible styling

**7** Price: \$290 (\$12MB) Contact: MSI Computer Australia Phone: (02) 9748 0070 Web: www.msicomputer.com.au + Ideal for sporty types + Good audio quality - Built-in Lilon battery



## ENTERTAINMENT ANYWHERE

## Apple iPod Shuffle

While the price of the 1GB iPod Shuffle is now a neat \$199, it still has too many drawbacks to make it a great MP3 player. In terms of storage, you probably won't find a better-value unit, but unfortunately, you don't get much else besides. There's no FM receiver, no voice recording, no line-in recording and no LCD screen. At 21g, it's the lightest MP3 player we've seen, but

that's mostly because it doesn't have much else in it. One thing it has that we wish it didn't is its integrated LiIon battery. The unit was also unable to handle full-scale digital audio at maximum output without producing clipping distortion, but on a high note, the earphones were the best in the entire feature. All up

though, this isn't one of Apple's better efforts.

6.5

**Price:** \$199 (1GB) **Contact:** Apple  
**Phone:** 13 36 22  
**Web:** www.apple.com.au  
+ Great-value storage - Built-in battery - Poor full-scale digital audio handling

## Samsung YP-T7Z

Samsung's compact YP-T7Z was the third 1GB flash memory player we tested. However, this one automatically started off on the back foot because of its high \$299 price tag — that's \$100 more than the iPod Shuffle and \$50 more than the MuVo TX FM. It's a compact unit with an LCD screen, but the built-in LiIon battery is a bit of a timebomb waiting to go off. It comes with an FM receiver as its only notable extra, but does play back .wav files, too. Audio quality was steady, with 0.03% THD at 1kHz and 30kHz filtering, which is a reasonable effort, although the 15kHz THD figures are getting up a bit. More impressive is its 92.3dB A-weighted SNR and the high 663mV RMS maximum output signal level. The earphones weren't quite as good as we would have expected, with a tad



6.5

**Price:** \$299 (1GB) **Contact:** Samsung  
**Phone:** 1300 369 600  
**Web:** www.samsung.com.au  
+ Reasonable audio quality - Pricey - Integrated LiIon battery

too much midrange and not enough in the higher frequencies. All up, although this one's a reasonable player, we'd go for the cheaper and better MuVo TX FM first.

## Apacer Audio Steno AP510

The Apacer AP510 has potential. Loaded with features such as an FM receiver and voice recording, it looks attractive and it's the only player to use a larger AA-cell removable battery. Unfortunately, the tiny stereo speaker dock requires

external power to work, and it simply doesn't have the horsepower to deliver decent sound at any reasonable listening level. Bass frequencies had a tendency of breaking up and distorting badly. You also can't hear much unless the volume levels are in the last five or so positions from maximum. The player can't handle a full-scale digital audio signal without going into clipping, which isn't good. When the clipping is managed, the AP510 can be made to



6

**Price:** \$190 (512MB) **Contact:** BlueChip  
**Infotech Phone:** 1300 727 474  
**Web:** www.apacer.com + AA-battery power - Below average audio quality - Speakers need help

produce reasonable results, although its 73.7dB A-weighted SNR is still below average. The earphone quality here was quite poor, with notable sizzling effects on higher frequencies making us want to dive for the stop button. All up, although we like the idea, we're not fans of the execution.

## Apacer Audio Steno AV230

The tiny, hard-to-use controls on this player made it a bit of a nightmare to operate. Despite the fact that it includes an SD expansion slot and removable AAA battery, the audio quality is a problem. Our test unit produced a lot of distortion, ☹

## HOW WE TESTED

Each player was submitted to what we consider the most strenuous audio testing barrage in the Australian IT publishing industry, thanks to our Audio Precision System Two audio test measurement unit. Here's what we tested:

◆ Total harmonic distortion (THD). This gives a quantitative result of how much unwanted harmonic frequencies each player produces when fed with a series of sinewave tones at 50Hz, 1kHz and 15kHz. Using these frequencies gives a reasonable spread across the audio frequency spectrum. Each player was set to maximum output and the result was measured as a percentage with 0% the ideal. Anything below 0.03% is good; anything over 0.3% isn't. Distortion can produce different audible effects from crackling to sizzling.

Because players can also produce unwanted radio frequency (RF) distortion due to the computer chips inside, we tested the THD in two ways. First, we measured all unwanted frequencies up to 500kHz, and second, we measured to just 30kHz and filtered out everything beyond that using what's known as a '30kHz low-pass filter' (LPF). The low-pass filter results will always be lower, but the lower the two sets of THD readings are, the higher the audio quality from that player.

The three audio sinewave tones used for testing were generated in software and encoded as both uncompressed 44.1kHz/16-bit stereo .wav files and as 320Kbps .mp3 files at a level of 1dB below the digital full-scale maximum (-1dBFS) to ensure the highest possible quality.

◆ Signal-to-noise ratio (SNR). This gives a quantitative result of just how much unwanted electrical noise is generated by each player. A player that's too noisy will sound like an AM radio, rather than like digital audio. The result is measured using a logarithmic scale called decibels (dB), and is a ratio of a known audio tone reference level compared to the measured level of background noise. The higher the score here, the better.

To measure the noise level correctly, we set the reference level to a 1kHz sinewave audio tone

(-1dBFS), with each player set to maximum output. We then measured the noise level by playing a special 'silent' .mp3 or .wav file where appropriate. This kept the player's internal audio circuitry active, allowing us to accurately measure any noise generated by it.

To further check the noise level, we measured it twice — first by checking for any electrical noise up to a frequency of 500kHz, and second, by using what's known as an 'A-weighted' filter, which more accurately reflect how our ears recognise different sound frequencies. Most vendors use A-weighted figures because they look better, but it's important to know the flat-response SNR as well, so you know just how well designed and built a player is.

◆ Maximum output signal. We also measured the maximum RMS (root mean square) output voltage of each player when connected to a 100K ohm load. Although most players are connected to low-impedance earphones (typically less than 64 ohms), a 100K ohm load is more typical of most stereo amplifiers. Generally, the higher the output level, the greater the chance the SNR will be good.

◆ Earphone quality check. We also checked each player's earphone quality through the use of specific tracks from Diana Krall's *When I Look Into Your Eyes* CD, used for its high recording quality, wide frequency response, sparse instrumental sound field and ultra-low distortion. Scores were given out of 10 for both bass and treble; higher scores indicate better results. ◆ Note that where a player was incapable of playing back the test tones at maximum output without serious and unwanted clipping distortion, the audio levels were reduced until the clipping was removed. Clipping distortion for a correct digital audio file is unacceptable and any player suffering from clipping is noted with (\*) symbol in the results table.

We also checked each player for features and operability. Any problems found here are mentioned in each of the reviews. All of these criteria were factored into our final score out of 10.



HP recommends Microsoft® Windows® XP Professional.

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## ENTERTAINMENT ANYWHERE

pushing over 6% at 15kHz. This wasn't clipping distortion, but the more worrying general kind that can't be corrected. It also produced plenty of radio frequency interference (RFI), which shows up in the SNR results. Its flat-response SNR of 25dB is just awful, but the fact that it drops to a more respectable 72dB using a 30kHz filter (which removes all of the nasties) shows this isn't the highest-quality player. This is another one that the distributor, BlueChip Infotech, could not provide pricing for.



### Geil iBall

The name Geil is best known for high-performance PC memory, and the company's new iBall multimedia player is about as weird as MP3 players get. The iBall not only handles MP3 audio, but plays a wide form of compressed videoclips

**5** Price: TBA (128MB)  
Contact: BlueChip Infotech  
Phone: 1300 727 474 Web: www.apacer.com + AAA-battery power—No extra features—Poor audio quality



**4** Price: \$179 (256MB) Contact: AMI Consultants  
Phone: (02) 9763 2122 Web: www.geil.com + Plays video files—Poor audio quality—Poor earphone quality

called MPV on its tiny, tiny 96 by 64-pixel screen. However, just why it does is anyone's guess. The screen is just big enough to get an idea of what you're looking at, and nothing more. But the player's big problem is the audio quality. While the earphones aren't bad in terms of bass/treble balance, the iBall produces

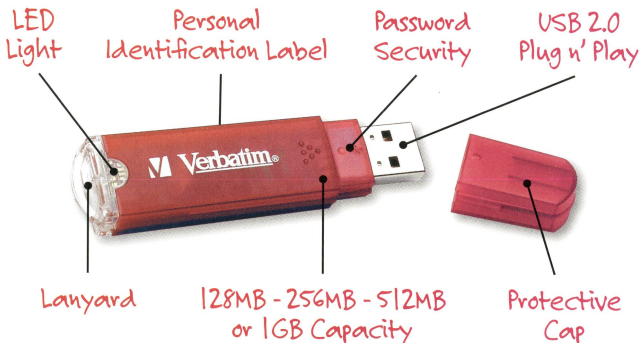
copious amounts of distortion, hitting 4.19% at 1kHz and ramping up to an ugly 32% at 15kHz—and that's with generous 30kHz filtering. Switch the THD to include all harmonics up to 500kHz and the 15kHz THD result hits a horrible 53%. After hearing the iBall, we think Geil should stick to making PC memory. **D**

## FLASH-BASED MP3 PLAYERS: HOW THEY COMPARE

Model	Apacer Audio Steno AB320	Apacer Audio Steno AP510	Apacer Audio Steno AV330	Apple iPod Shuffle	Creative MuVo Mix	Creative MuVo TX FM	Geil iBall	Lexar Digital Music Player LDP-600	Linophir L117 MP3 Player	MSI Mega Player 521	Pioneer DreamVision MP318	MSI Mega Player 522BT	Samsung YP-T72
Price	TBA	\$190	TBA	\$199	\$149	\$249	\$179	\$189	\$89	\$290	\$159	\$310	\$299
<b>SPECIFICATIONS</b>													
Rated capacity	128MB	512MB	128MB	1,000	512MB	1GB	256MB	256MB	256MB	512MB	256MB	256MB	1GB
True capacity (bytes)	124,025,856	515,866,624	124,644,320	1,038,643,200	516,784,128	1,043,169,280	241,745,920	257,662,976	257,531,904	518,750,208	259,489,792	257,130,496	1,025,212,416
Onboard memory expansion	No	Yes	Yes	No	No	No	No	Yes	No	No	No	No	No
USB connection	2.0	2.0	2.0	2.0	2.0	2.0	1.1	2.0	2.0	2.0	2.0	2.0	2.0
Battery power	One AAA	One AA	One AAA	Integrated LiIon	One AAA	One AAA	Integrated LiIon	Integrated LiIon	One AAA	Integrated LiIon	One AAA	Integrated LiIon	Integrated LiIon
Weight (grams)	40	86	36	21	38	43	33	53	36	45	50	65	37
<b>FEATURES</b>													
LCD screen	Yes (mono)	Yes (mono)	No	No	No	Yes (mono)	Yes (colour)	Yes (mono)	Yes (mono)	Yes (OLED)	Yes (mono)	Yes (OLED)	Yes (colour)
FM receiver	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Line-in recording	No	No	No	No	No	No	No	No	No	No	Yes	Yes	No
Voice recording	Yes	Yes	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	No
FM transmitter	No	No	No	No	No	No	No	Yes	No	No	No	No	No
Bundled speakers	No	Yes	No	No	No	No	No	No	No	No	No	No	No
Works with Windows Explorer	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>FORMAT SUPPORT</b>													
WAV/Ogg Vorbis	Yes/No	No/No	No/No	Yes/No	No/No	Yes/No	No/No	No/No	Yes/No	No/No	No/No	Yes/No	Yes/No
MP3/WMA	Yes/Yes	Yes/Yes	Yes/No	Yes/No	Yes/Yes	Yes/Yes	Yes/No	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
<b>TEST RESULTS</b>													
THD at 50Hz (flat)	0.26%	0.29%*	2.40%	0.41%*	0.30%	0.29%	0.29%	0.17%	0.12%	0.25%*	0.24%*	0.33%	0.15%
THD at 1kHz (flat)	0.25%	0.27%*	5.50%	0.43%*	0.29%	0.32%	4.95%	0.22%	0.13%	0.25%*	0.24%*	0.29%	0.18%
THD at 15kHz (flat)	0.28%	0.47%*	6.50%	0.55%*	0.32%	0.32%	53%	2.48%	0.13%	0.276%*	0.27%*	0.32%	2.26%
THD at 50Hz (30kHz LPF)	0.015%	0.032%*	0.790%	0.013%*	0.022%	0.022%	0.210%	0.084%	0.011%	0.014%*	0.013%*	0.015%	0.037%
THD at 1kHz (30kHz LPF)	0.012%	0.032%*	0.26%	0.095%*	0.022%	0.022%	4.190%	0.084%	0.010%	0.012%*	0.013%*	0.013%	0.030%
THD at 15kHz (30kHz LPF)	0.045%	0.26%*	6.300%	0.015%*	0.051%	0.062%	32.000%	0.096%	0.011%	0.045%*	0.047%*	0.046%	0.083%
SNR (1kHz at -1dBFS) (flat)	55.1dB	62.7dB	25.3dB	64.5dB	53.6dB	54dB	63dB	62.1dB	58.7dB	57.5dB	64.4dB	53.8dB	62.8dB
SNR (1kHz at -1dBFS) (A-weighted)	85.7dB	76.7dB	73.2dB	93.5dB	86.5dB	88.2dB	89.6dB	89.4dB	87.3dB	89dB	94.5dB	86.6dB	92.3dB
Maximum output signal (mV RMS)	221	730*	298	589*	385	391	498	464	567	288*	456*	245	663
Earphone quality (bass/treble) out of 10	6/5	4/6	6/5	8.5/8.5	8/7	7.5/7.5	7/8	8/8	6/6	8/8	7/7	8/8	7.5/6.5

\*Indicates output measure at lower than full output due to excessive clipping distortion (see review).

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ENTERTAINMENT ANYWHERE

## MICRO-DRIVE PLAYERS

## Creative Zen Neon

Creative finally has a product that we think should give Apple plenty to worry about. The new Zen Neon looks and sounds the business. For a reasonable \$299, this unit packs in a 5GB micro-drive — 1GB more than the similarly priced iPod mini — and you also get an FM receiver, voice recording and line-in recording, with direct-to-MP3 conversion. Add in its tiny

74g weight and compact size, and the Neon looks set to take the market by storm. In terms of audio quality, the Neon is about as good as it gets. Its 0.01% THD at 1kHz with 30kHz filtering is excellent, but more impressive was its 73.8dB flat-response SNR. No other player came within a statistical bull's roar. This is one very well designed little player. Creative's earphone quality was also pretty good, although we'd still take a pair from an iPod first.

The Neon supports .wav file playback along with the usual MP3 and WMA support. The only real gripe we have is with the built-in Lilon battery, although Creative at least calls it 'serviceable', which means it can be swapped out with a jeweller's-size Phillips-head screwdriver and a replacement battery from Creative. (There's no word on battery cost as yet.) The 128 by 64-pixel LCD screen has a display that looks very similar to some of MSI's models,



but the fact remains it is definitely one very cool little toy. If you're thinking of buying an iPod Mini, we'd strongly suggest taking a look at the Zen Neon first.

**9** Price: \$299 (5GB) Contact: Creative Labs Phone: (02) 9021 9800 Web: www.au.creative.com + Great price + Excellent audio quality + Bucketloads of features

## Creative Zen Micro

With the arrival of the Zen Neon, Creative now has a problem: what to do with the Zen Micro. That said, the Zen Micro still has *some* life left in it. One great feature is the removable Lilon battery. This means you can just pull it out and replace it. It's one of the few drive-based players that has a removable battery, so it gets bonus points for that.

Unfortunately, interfacing with the Micro requires you to use Creative software. Why Creative couldn't allow the Micro to work straight with Windows Explorer is beyond us. On the other hand, its software will integrate with Windows Explorer, which is admittedly better than the way iTunes demands to act as gatekeeper between your player and PC. Its Audio quality was pretty good, with 0.024% THD at 1kHz and 30kHz filtering, and

an excellent A-weighted SNR of 96dB. The maximum output level of 797mV RMS is perfect for playing through your home stereo as well. Unfortunately, it lacks line-in recording, which Creative somehow managed to shoehorn into the smaller Neon. We also reckon Creative will have to do something about the price. At \$379, it doesn't look anywhere near as good as the \$299 Neon, despite being a decent player.



**7.5** Price: \$379 (5GB) Contact: Creative Labs Phone: (02) 9021 9800 Web: www.au.creative.com + Removable battery + Good audio quality — Requires Creative software to work

## Samsung YH-820

Samsung's YH-820 is not a bad-looking unit, but we had some problems getting it to work properly. In particular, it took forever to load up into Windows Explorer. After coming and going a few times, it finally decided it *did* want a drive letter under Explorer, and then worked fine. The best feature of the YH-820 is its format support:

it handles WMA and MP3, along with .wav files and the Ogg Vorbis format. Ogg Vorbis support is sadly not as strong as it was when we did this feature last year, and the YH-820 was the only player we tested to support it. You also get an FM receiver, voice and line-in recording, as well as a colour screen that is capable of displaying .jpg files. We're disappointed this one uses a

built-in Lilon battery when it wouldn't have taken much to make it removable. The audio quality here was also the worst of the three in this category. It had high THD levels at 15kHz and an A-weighted SNR result of 86.9dB, which was lower than expected. The earphones were also lacking in treble response. All up, although it's still a reasonable unit, the Zen Neon is much better value.



**7** Price: \$379 (5GB) Contact: Samsung Phone: 1300 369 600 Web: www.samsung.com.au + Supports WAV and Ogg Vorbis formats + Good features — Average audio quality

## PORTABLE HARD DRIVE PLAYERS

## Creative Zen

If the Neon's 5GB of space isn't enough for all your music, then Creative's full-blown 20GB Zen is the way to go. At \$439, it's the cheapest 20GB player on the market and comes with extras that make it much better value than Apple's iPod. It adds in an FM receiver, voice recording, as well as .wav file playback support in addition to its MP3

and WMA capabilities. Again, Creative require you to use its software rather than just work with Windows Explorer directly. Another problem is the built-in Lilon battery, but the fact is none of the four hard drive models we tested in this group give you the option of removable batteries, so your choice primarily comes down to features, price and audio quality. Luckily for the Zen, it

has the last criteria nailed. The Zen was the only player to keep 30kHz filtered THD levels below 0.1% across the board, and its 95.4dB A-weighted SNR is spot on with Creative's own claims. The maximum output signal of 780mV RMS will also perfectly slot in with your home stereo. If you're fussy about the quality of your music, but figure 5GB won't be enough, the Zen is your best bet. ☺



**8** Price: \$439 (20GB) Contact: Creative Labs Phone: (02) 9021 9800 Web: www.au.creative.com + Good audio quality + Good features — Built-in battery



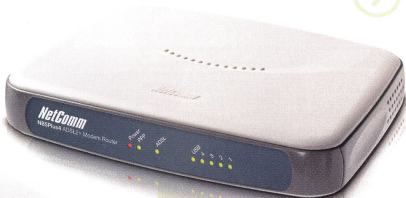
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# Apple iPod

The one thing the iPod has going for it (apart from Apple's phenomenal marketing prowess) is an easy-to-use interface. And despite having barely changed since its introduction, the styling still looks as clean as it did when it first arrived. What we don't like is the fact that Apple requires you to pay extra for third-party add-ons that other vendors include in their players for free, such as an FM radio and voice recording. Then there's iTunes, which basically takes over your PC as far as anything audio goes and acts as the gatekeeper between you and your iPod. In addition, the only way to replace the battery is via a \$99 Apple servicing, the iPod will eventually cost you more than the sticker price. As for audio quality, the iPod does reasonably well, but not quite as well as the Creative Zen. Its 92dB A-weighted SNR result is very good, but its 15kHz THD filtered rating at 0.167% isn't exactly pretty. What we do like is the huge 1004mV output signal — that's the highest of any player we've tested — and Apple's earphones, which bring music to life. The colour screen is now standard on the iPod, and it's aimed at letting you view your favourite photos. Unless the iPod comes with a bonus magnifying glass that we don't know about, we can't see why you'd bother, as the screen is a little small to make this useful. All up, although the iPod still looks good, it lacks the advanced features of other players and its audio quality could use a little work.



**Price:** \$449 (20GB)  
**Contact:** Apple  
**Phone:** 13 36 22  
**Web:** www.apple.com.au + Great design + Passable audio quality — No extra features — Requires iTunes software

# Samsung YH-925

The YH-925 has features that are missing from the iPod, such as voice and line-in recording. It matches the current iPod with its colour screen and JPEG image display capabilities. However, the audio quality was not as good, with THD levels at 15kHz pushing beyond 0.4% with 30kHz filtering. The 1kHz filtered THD level of 0.017% is good, but the 15kHz result effectively ruins that. Its A-weighted SNR result of 87dB is also not as good as either the iPod or Creative Zen. We're not fans of the earphones either. The YH-925GS does have some good features, but the not-so-good audio quality takes away some of the shine.



**Price:** \$449 (20GB)  
**Contact:** Samsung  
**Phone:** 1300 369 600  
**Web:** www.samsung.com.au + Lots of features + Colour screen — Audio quality just lacking



**Price:** \$479  
**Contact:** Pioneer Computers Australia  
**Phone:** (02) 9690 2888  
**Web:** www.pioneercomputers.com.au + Good features — Poor audio — Too pricey

# Pioneer DreamVision HD200

We think Pioneer Computers might be suffering from a 'dream vision' of its own if it expects people to pay \$479 for the HD200. While it adds in some great features, including an FM receiver and line-in recording (the only one of the four hard drive models with this combination), the audio quality was the worst in this category.

The most disappointing result was the flat-response SNR of just 42.6dB, which is about as good as a typical cassette tape. Even with A-weighted filtering, it only managed 79dB. The maximum output level of just 167mV RMS was also the lowest we've seen. On the other hand, its THD figures were surprisingly good, given everything else. All up though, this is one to steer clear of.

## DRIVE-BASED MP3 PLAYERS: HOW THEY COMPARE

Model	Apple iPod	Creative Zen	Creative Zen Micro	Creative Zen Neon	Pioneer DreamVision HD200	Samsung YH-920	Samsung YH-925
Price	\$449	\$439	\$379	\$299	\$479	\$379	\$449
<b>SPECIFICATIONS</b>							
Storage type	Hard drive	Hard drive	Micro-drive	Micro-drive	Hard drive	Micro-drive	Hard drive
Rated capacity	20GB	20GB	5GB	5GB	20GB	5GB	20GB
True capacity (bytes)	19,915,575,296	19,920,117,760	4,917,370,880	4,958,322,688	19,985,842,176	4,991,205,376	19,985,842,176
Onboard memory expansion	No	No	No	No	No	No	No
USB connection	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Battery power	Integrated Lilon	Integrated Lilon	Removable Lilon	Integrated Lilon	Integrated Lilon	Integrated Lilon	Integrated Lilon
Weight (grams)	165	141	107	74	167	85	156
<b>FEATURES</b>							
LCD screen	Yes (colour)	Yes (mono)	Yes (mono)	Yes (mono)	Yes (mono)	Yes (colour)	Yes (colour)
FM receiver	No	Yes	Yes	Yes	Yes	No	No
Line-in recording	No	No	No	Yes	Yes	Yes	Yes
Voice recording	No	Yes	Yes	Yes	No	Yes	Yes
FM transmitter	No	No	No	No	No	No	No
Bundled speakers	No	No	No	No	No	No	No
Works with Windows Explorer	No	No	Yes (requires software)	Yes	Yes	Yes	Yes
<b>FORMAT SUPPORT</b>							
WAV/Ogg Vorbis	Yes/No	Yes/No	Yes/No	Yes/No	No/No	Yes/Yes	No/No
MP3/WMA	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
<b>TEST RESULTS</b>							
THD at 50Hz (flat)	0.19%	0.13%	0.13%	0.20%	0.72%	0.44%	0.42%
THD at 1kHz (flat)	0.21%	0.19%	0.19%	0.20%	0.73%	0.12%	0.12%
THD at 15kHz (flat)	2.64%	2.41%	2.39%	0.23%	3.11%	0.70%	0.62%
THD at 50Hz (30kHz LPF)	0.041%	0.023%	0.023%	0.012%	0.045%	0.128%	0.124%
THD at 1kHz (30kHz LPF)	0.028%	0.024%	0.024%	0.010%	0.032%	0.020%	0.017%
THD at 15kHz (30kHz LPF)	0.167%	0.081%	0.081%	0.048%	0.166%	0.428%	0.410%
SNR (1kHz at -1dBFS) (flat)	65.1dB	64.4dB	64.3dB	73.8dB	42.6dB	64.2dB	63.6dB
SNR (1kHz at -1dBFS) (A-weighted)	92.7dB	95.4dB	96dB	92.2dB	79.6dB	86.9dB	87.4dB
Maximum output signal (mV RMS)	1004	780	797	384	167	582	609
Earphone quality (bass/treble) out of 10	8.5/8.5	8/7	7.5/7	8/7	7.5/7.5	7.5/6	7.5/6

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ENTERTAINMENT ANYWHERE

# Movies and music on the go

**Nick Mailath tests eight devices that let you take your music and movies with you.**

Portable media players (PMPs) first appeared around this time last year, and since then there are a number of options available, from a basic portable video player right up to fancy-pants models that can control

your TV and VCR.

If you're in the market, there are a few things to consider. Most important is to figure out what features you consider vital, as many players have strengths in one area, but are weak in others. Audio is not so much a matter of the player's hardware, but the quality of audio it can decode. Low-quality 4-bit ADPCM may be passable using headphones, but it's not good enough for playback through a home theatre system. The size of the unit may also play a big

part in your decision.

We'd also recommend shopping around for devices that don't actually bill themselves as PMPs. Take the Sony PSP: if you're looking for portable entertainment, it doesn't get much better than

this. You can play games, watch movies and play music on the one device for around the same price as a low-end PMP. The bottom line is shop around to make sure you get what you want in a PMP. There are plenty of good options out there.

## TECH TERMS

**ADPCM** (Adaptive Differential Pulse Code Modulation)

A PCM encoding technique that uses about half the space of normal PCM, but introduces a lot of noise.

**PCM** (Pulse Code Modulation). Uncompressed digital audio, more commonly known as .wav files or CD audio.

## Sorell SV-10

We first tested the Sorell SV-10 in *PC User* April (see page 130), and it remains the king of the PMPs, with its high-quality screen and extensive features. It comes with a built-in FM radio tuner and 1.3MP camera for recording video and taking photos. The player has both AV in and out, so you can record from any source or play your media files on your TV or stereo. The SV-10 can play back most video formats and also includes conversion software for anything it can't play.

Its battery life was second only to the Creative Zen

Portable Media Center, with the former producing 7 hours of constant video with the sound on. Playback of standard XviD movies is this player's one weak point—there was the occasional stutter in our testing, but it was still watchable. By comparison, DivX playback was very smooth. The audio output was loud enough for a couple of people to listen to comfortably and the audio quality was also very good.

The joystick provided for navigation is a little small and takes some getting used to, but remains effective. Well-designed



**Price:** \$799 **Contact:** [jstation.com.au](mailto:info@jstation.com.au)  
**Web:** [www.jstation.com.au](http://www.jstation.com.au)

+ Long battery life—Some problems with XviD playback



menus also help ease of use. The player is quite comfortable to hold and weighing only 230g, it's very portable. Adding to this unit's appeal is an excellent screen with high contrast and a good picture clarity.

The Sorell SV-10 remains the

best PMP we have seen, although the competition is definitely catching up. Ultimately though, this unit's comparatively low price and extensive features still keep it ahead of the others.

## Archos Gmini 400

The Archos Gmini is the smallest PMP we have seen so far, weighing only 165g and with a footprint that's a little larger than a standard business card. Its 2.2in colour screen is clear and easy to read, and a four-way D-pad button is used to move through the menu system. The other buttons on the player take a little getting used to. For example, the button that turns the player on will not turn it off—you have to hold the Back button to achieve this, which is

a little counterintuitive. On the whole though, it is quite easy to find your way around the interface once you know its quirks.

Video playback on the Gmini was a little choppy when using MP3 audio, but fine with ADPCM. No re-encoding software is included with the player, but a conversion program is available from the Archos Web site. However, you may be better off trying some of the more popular free



**Price:** \$699 **Contact:** World Technology

**Distribution Phone:** (03) 9310 3497 **Web:** [www.archos.com](http://www.archos.com)  
+ Compact size + 20GB storage  
— Limited media support



encoding software (like Auto Gordian Knot), as we had some problems getting the Archos software to work correctly. A Compact Flash (CF) socket is built into the side of the player, into which you can plug your CF storage card or a CF-sized card

reader, should you wish to read a different flash card format. The Archos Gmini is the only player here that will fit in your pocket without tearing your pants, so if compact is what you're after, this is definitely worth considering.





## Epson P-2000

The Epson P-2000 is not a dedicated media player as such, but it has the capability all the same. It's primarily intended to be used as a picture viewer for digital photos, but can also play MP4 videos (like the Sony PSP) and MP3/AAC audio files. Screen quality was obviously a priority when Epson was designing the P-2000 and it's a clear cut above the rest of the players in this regard. The 3.8in screen can handle a resolution of 640 by 480 and it produces the best images we've seen on a handheld device. Photos come out sharp, bright and vibrantly

coloured. This quality is not limited to image files either; the difference when watching videos on this player compared to most of the others was astounding. Video playback was smooth once converted with a suitable program (PSP Video 9 works well — see page 66) and audio is respectable, too. There is only a single speaker in the back of the unit, but it still produces clear sound at a reasonable volume. It also has a built-in CF and SecureDigital card reader, so you can easily copy your flash memory card data onto the

**8.5** Price: \$899  
Contact: Epson Phone:  
(02) 8899 3666 Web:  
www.epson.com.au  
+ Excellent screen  
+ 40GB hard drive  
- Poor battery life



unit's 40GB hard drive. The only two complaints we have about this unit are its size and battery life. The P-2000 is slightly larger than the Creative PMP, and the largest unit we tested. The battery lasted around 2 hours 15 minutes while watching

video, which is a far cry from the other players. However, the battery is user replaceable, so a spare (or two) would fix this problem. If you're willing to overlook the P-2000's few shortcomings, the rest of its features look mighty impressive.

## Banksia Digital PMP20



**8** Price: \$755  
Contact: NetComm  
Phone: (02) 9424 2070  
Web: www.netcomm.com.au + Touchscreen  
+ Good price - Average screen contrast

Banksia Digital, the consumer electronics division of Australian company NetComm, recently released the PMP20, and it's a player that has quite a few unique features packed in.

The most notable of these are the touchscreen interface and the capacity to record video. A stylus is also included, which is stored in the back of the player. The video recording saves to

ASF format, and generally works well. You can also record audio via the external input or the internal microphone. General media file playback was also good, although some DivX files simply refused to play while others worked fine.

The PMP20 includes some unique extras, like a calculator, paint program, calendar and memo function. Using the touchscreen, these features are easy to use and can be quite handy, but if you misplace the stylus they'll be close to useless. The unit has two built-

in speakers and comes with a dock, headphones, A/V cables and a carry case. Video playback will last about 3 hours — an OK result, but significantly behind the Creative and Sorell players. The PMP20 is a little bulky at 294g, but it's still comfortable to hold, thanks to good case design. Like most of the PMPs we reviewed, the PMP20 includes a CF slot for either a card or card reader. All up, the Banksia Digital PMP20 is quite a decent unit. It has heaps of features and is competitively priced to boot.

## Creative Zen Portable Media Center

The Creative Zen Portable Media Center (PMC) was one of the first portable media players on the market, and even close to a year after its release, it still offers enough features to keep the competition on their toes. One of the best things about the PMC is its interface. Built on the Windows Mobile operating system, it has a very familiar look to Windows XP Media Center Edition. It's by far the easiest to navigate of all those we looked at. This is also in part due to there being little room to get confused — the

interface has been developed to be straightforward without sacrificing functionality.

Windows Media Player (WMP) 10 is the only software that will interface with the player; it won't show up as a hard drive in Windows Explorer like most others. This also means it can't be used as a portable hard drive, as WMP can only access media files. The biggest annoyance with the PMC is the requirement that all your music and videos be converted to Windows Media Audio or Video files

**8** Price: \$799  
Contact: Creative Labs Phone: (02) 9021 9898 Web: www.au.creative.com + Best battery life + Clean user interface - Only plays WMV and WMA



before being transferred to the PMC. This removes the trial and error as to which formats will play, but a standard 700MB DivX file will take around 35 minutes to re-encode on a 2.4GHz Pentium 4. In our testing, even the re-encoded

files seemed a little stuttery at times. With its long battery life and excellent user interface, the Creative Zen Portable Media Center is still a good buy, which is quite an achievement considering it was originally released a year ago. Ⓢ



## ENTERTAINMENT ANYWHERE

### MSI Mega View 566



**7.5** Price: \$599 Contact: MSI Computer Australia Phone: (02) 9748 0070 Web: [www.msicomputer.com.au](http://www.msicomputer.com.au) + Includes spare battery + Plenty of features - Poor screen quality

Except for a few minor changes, the Mega View 566 is pretty much the same as the 561 model we previously tested in March (see page 114). This new version comes with a second backup battery, which can extend your battery life to up to 7 hours; it also has an SD/MMC card slot incorporated into the back of the player. It is fairly compact compared to most of the others and, weighing just 230g, is comfortable to hold and carry around. The 3.5in screen doesn't have the best picture due to the LCD's high dot pitch rating, but it is still bright and generally acceptable.

The player's best feature is its price — at \$599 it's the least expensive player we tested. Moreover, despite its low price, the 566 doesn't lack features at all; in fact, it has more than most. Overall, this new Mega View is a great-value player that is held back only by its slightly sub-par screen. If you're not fazed by this, it's a good buy.

### Archos AV420



**7** Price: \$899 Contact: World Technology Distribution Phone: (03) 9310 3497 Web: [www.archos.com](http://www.archos.com) + Includes video recording + Remote control function - Pricey

The AV420 is the larger brother of the Gmini. The AV420 is designed to be more of a digital video recorder than the Gmini. As such, it can record in excess of 80 hours of video on its 20GB Hitachi hard disk. The included dock has all the A/V input cables you need to connect your

TV or VCR. However, all these cables are permanently attached to the dock, seriously reducing its portability. The AV420 can also be programmed to act as a remote control for your VCR. The main things holding it back are its limited media support (it only plays MPEG-4 files and has issues with MP3-encoded video playback) and lack of encoding software, although there are plenty of freeware options.

### Orbit DMP-768T

The Orbit is not quite as portable as the other PMPs, but despite its large size, it should still fit comfortably in a backpack or shoulder bag. With its 7in screen and large battery it weighs a hefty 837g. The unit's screen quality isn't too bad and DivX and XviD playback was surprisingly smooth in our tests. The unit did get fairly warm when in use for extended

periods of time, but not enough to be uncomfortable to hold. The Orbit also features a built-in TV tuner, FM transmitter and supports direct A/V input. It has a 30GB hard drive and comes with accessories including everything you need to use it in-car. While the Orbit's huge 7in screen is a great feature, many people will probably find it too large for their needs.



**7** Price: \$795 Contact: Aggeggi Phone: 1300 559 593 Web: [www.aggeggi.com.au](http://www.aggeggi.com.au) + 30GB hard drive + Large 7in screen - Poor battery life

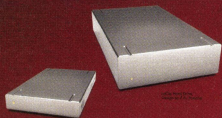
### HOW WE TESTED

Where applicable, each of the players was tested using a variety of different media file formats, such as DivX, XviD, MPEG-1/2, WMV, MP3 and WMA. Each player's capabilities with these files was used to judge the general quality of the audio and video playback.

The battery life of each unit was tested by looping a full-length movie until the player shut off completely.

### PORTABLE MEDIA PLAYERS: HOW THEY COMPARE

Model	Archos AV420	Archos Gmini 400	Banksia Digital PMP20	Creative Zen Portable Media Center	Epson P-2000	MSI Mega View 566	Orbit DMP-768T	Sorell SV-10
Price	\$899	\$699	\$755	\$799	\$899	\$599	\$795	\$799
Screen size	3.5in	2.2in	3.5in	3.8in	3.8in	3.5in	7in	3.5in
Storage capacity	20GB	20GB	20GB	20GB	40GB	20GB	30GB	20GB
Memory card slot(s)	CF	CF	CF	None	CF, SD/MMC	SD/MMC	None	None
Removable battery	Yes	No	Yes	Yes	Yes	Yes	Yes	No
Tested battery life (hours:minutes)	3:25	5:00	3:00	10:00	2:30	3:30	2:30	7:00
Player weight	272g	164g	294g	352g	410g	245g	837g	230g
Audio/video recording	Yes/Yes	Yes/No	Yes/Yes	No/No	No/No	Yes/Yes	No/No	Yes/Yes
Voice recording	Yes	Yes	Yes	No	No	Yes	No	Yes
Stand/carry case included	Yes/No	No/No	Yes/Yes	No/Yes	Yes/Yes	Yes/Yes	No/Yes	Yes/Yes
Encoding software included	No	No	Yes	Yes	No	Yes (trial version)	No	Yes
Integrated camera	No	No	No	No	No	No	No	Yes
Onboard games	No	Yes	No	No	No	No	No	No
Remote	Yes	No	No	No	No	Yes	Yes	No
FM radio	No	No	No	No	No	Yes	No	Yes
Touchscreen interface	No	No	Yes	No	No	No	No	Yes



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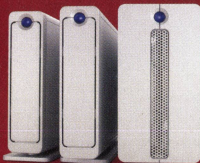


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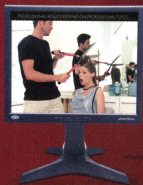


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# The big picture

**Want to see more of your favourite movies, games and applications? Darren Yates tests 18 of the latest big-screen monitors.**

## TECH TERMS

**Response time.** For LCD monitors only, this is the time it takes for any pixel to switch from one extreme to another and back again — either from black to white to black, or vice versa. Technically, it's the accumulation of the rise and fall times (Tr and Tf). It's measured in milliseconds and generally, faster is better, but don't be conned by some of the hype regarding this. The faster the response time, the less the chance of smearing or ghosting, but the greater the likelihood the viewing angles will be atrocious. It's a very rare LCD monitor that is perfect when it comes to viewing angles and ghosting.

**Colour inversion.** This is a fault with many LCD monitors that appears when you view the monitor from below (and sometimes above) horizontal. As you increase the angle from the centre of the screen, the colours change and eventually appear as a negative of themselves. It's this fault that makes them a poor choice for accuracy-critical colour work, such as desktop publishing. **Ghosting/smearing.** LCD monitors that are too slow in their response time (generally anything slower than 16ms), cannot switch pixels on and off fast enough to match the incoming new image. The result is often a smearing or 'ghost trail' of previous images, as old ones aren't removed before new ones are displayed. It's not usually a problem for general Windows work, but for 3D gaming and DVD movies, it's a disaster. Doesn't occur on CRT monitors.

The computer monitor industry is currently going through a bit of a sea change. Good, old CRT monitors are being consigned to the technology scrap heap as LCD monitors continue coming in by the shipload. But 'big' is definitely the buzzword for the moment, with large-screen monitors in both CRT and LCD formats drastically coming down in price and skyrocketing in popularity.

We tested a range of 19in CRT and LCD monitors for this roundup, and we also looked at some of the latest 20in and larger widescreen LCD monitors for good measure.

## What we found

This time last year, 17in LCD monitors were all the rage and their image quality suffered because of poor viewing angles. The 19in monitors had lousy response times, resulting in ghosted images on DVD movies and 3D games.

This time around, 17in LCD monitors are cheap (under \$400), but it's the bigger screens that are growing in popularity. Yet even these new models are not without their problems.

In terms of response time, the latest 19in LCD models are now as fast as last year's 17in units. Unfortunately, they also exhibit the same poor viewing angles, which pose some real problems: there's no way you could use one of these as a screen for your home theatre PC, for example.

For personal 3D gaming use, the lower response times mean these LCDs are now fast enough to remove any ghosting or smearing. But for serious gaming, LCDs still have a serious limitation and that's resolution. All the 19in LCD monitors we tested offer a maximum resolution of 1,280 by 1,024 pixels. Moreover, the nature of LCD technology means the vast majority of these screens look ordinary at anything less than this.

It's hard to compare this with a good 19in CRT monitor, which has no ghosting, great viewing angles, great image quality at almost any resolution and a maximum resolution that can go all the way to 2,048 by 1,536 pixels. With many new games offering support for 2,048 by 1,536 resolution, a 19in LCD monitor could leave you

shortchanged if you're a gamer.

CRT monitors are also considerably cheaper. Most 19in models can be had for under \$400, which is about half your average 19in LCD monitor. With all this going for them, you'd be mad to write CRTs off your list.

If you have the cash, there's also the possibility of going for a widescreen LCD monitor. Despite reviewing six models for this story, we still think there's only one widescreen LCD monitor you should bother checking out and that's Dell's awesome 2405FPW. It's bigger and cheaper than almost anything else, and reigns supreme over the other big-screen monitors. In our view, it's really the only LCD monitor that does everything right, making it ideal for personal or home theatre use.

There's plenty of hype around about LCD monitors; some of it is true, but most of it's not. Chosen carefully, an LCD monitor can be a great addition to your PC, but don't discount the old CRT monitor. Old they may be, but for some applications, particularly 3D gaming, you won't find anything better at an affordable price.

## 19IN LCD MONITORS

### Mitsubishi DV197SB

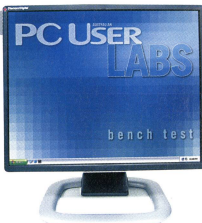
The DV197SB is one of the better units in this category and although it suffers from some of the typical TFT LCD monitor problems, it's better than most.

It produced good results on both our extreme greyscale and pixel-tracking/phase lock tests, with excellent images on both. We saw no problems on our 3D gaming tests, and DVD movie playback wasn't too bad either. As good as it was, these results were tempered by the poor vertical viewing angle, which seems to show up on every LCD screen with a response time

**Price:** \$579 **Contact:** Mitsubishi Electric Finance: (02) 9684 7777 **Web:** [www.mitsubishi-electric.com.au](http://www.mitsubishi-electric.com.au)  
+ Excellent greyscale testing  
+ No smearing or ghosting  
- Poor vertical viewing angle

of under 20ms, so you won't be able to use this as a home theatre monitor.

The DV197SB uses an external power brick, but its VGA and DVI sockets give you both analog and digital connectivity options. It even autoscans to the incoming video



signal whenever it changes and locks onto it as well.

We wouldn't call this the perfect LCD monitor, but it comes reasonably close.



## BenQ FP91V+

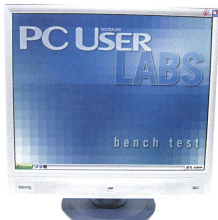
The FP91V+ is another OK LCD, but unfortunately, its image quality was undone by leakage from the blue power LED onto the screen.

When viewing dark images, there was a small yet noticeable blue hue cast over the bottom inch of the screen, which we believe could only be coming from the LED. It's a real pity, because otherwise this was one

of the better performing units.

Extreme greyscale testing showed this to handle contrast levels well, with only the very extreme black level not being visible. Our pixel-tracking/phase lock test showed no noise or colour errors at all. It performed well on 3D gaming and DVD movies showed a generally good and balanced level of brightness and contrast. Given its 6ms response time, the FP91V+'s good contrast levels came as something of a surprise.

Unfortunately, and as usual, the vertical viewing angles were awful, with the resultant colour inversion throwing colour accuracy out the window. However, with DVI and VGA inputs, integrated AC power and an autosync on signal feature, this one has potential if you're a keen 3D gamer. That said, at \$799 we'd still recommend you check out a good CRT monitor first.



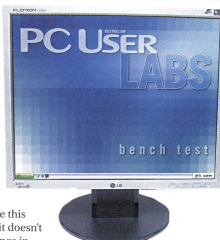
**7.5** Price: \$799 Contact: BenQ  
Phone: (02) 9352 8800  
Web: www.benq.com.au  
+ Generally good image quality  
+ Fast response times – Blue LED leakage onto screen

## LG Flatron L1950S

The L1950S is quite a stylish design with its thin bezel, but it was another to do poorly in our pixel-tracking/phase lock test. While it passed our extreme greyscale test with only the very end tips of near-whites and near-blacks disappearing into the mud, it was another monitor to display a distinctive pink hue on our pixel-tracking test.

Its 12ms response time was fast enough to keep it out of trouble on our gaming tests, with no visible smearing or ghosting of video images visible. Its DVD playback quality was also quite good, with no visible contrast errors. This goes to show that although many of these monitors boast a response

**7.5** Price: \$529  
Contact: LG Electronics  
Phone: 1800 725 375  
Web: www.lge.com.au  
+ Great styling + Fast response time and no ghosting – Pixel tracking issues



time of 8ms or less, once this figure gets below 16ms it doesn't make that much difference in practice. Its onscreen controls are a bit on the small side, but they're well labelled, which makes a nice change. Our test unit also failed to sync up the video when the signal changed,

but the unit's one-touch auto setup button somewhat compensates for that.

It's not a standout monitor, but it's a generally creditable performer.

## HP L1902

The L1902 is the only monitor we received from HP for this roundup, and despite having a comparatively slow 16ms response time, it also suffered from image quality issues.

It struggled on our extreme greyscale test, unable to handle near-whites or near-blacks and it exhibited an inability to lock correctly to our pixel-tracking/phase lock test. It handled 3D gaming well though, with no ghosting at all. However, some contrast crushing on skin tones was visible on DVD movie playback.

Its poor vertical viewing angle didn't help either. As usual, this is a monitor that would be fine provided you're

**7** Price: \$599  
Contact: HP  
Phone: 13 13 47  
Web: www.hp.com.au  
+ No image ghosting  
– Poor contrast/EGS response – Anchored VGA cable



sitting right in front of it, but we certainly wouldn't use it for home theatre use.

It only offers a single VGA input and that's via an anchored cable, which makes it more difficult to replace if damaged.

HP gets points for styling and easy-find controls, but there are no real standout features on this LCD.

### TECH TERMS

**Contrast ratio.** The difference or ratio between video-standard black and white colour levels. Typically, this is about 500:1 for LCD monitors, but 5,000:1 for CRT monitors; the higher it is, the better. Poor-contrast monitors have trouble showing extreme greyscales (see below) and lack detail in darker and lighter image areas.

**Extreme greyscale (EGS).** This is the term for what's known as near-whites and near-blacks — colours that are very close to video-standard or 'perfect black' and 'perfect white'. On poor-quality monitors, these near-whites and blacks are indistinguishable from perfect black and perfect white. The result is poor or no image detail in any dark, shadowed areas in games or DVDs. Clouds and brighter areas do the same, often simply going completely white.

**Phase lock.** When a video signal is connected to a monitor, it has to adjust itself to lock onto the phase of the incoming signal to match it with the monitor's screen pixels or dots. If the monitor doesn't, the screen pixels won't correctly match the image pixels in the video signal and the result will look awful. Good monitors will automatically perform this phase lock, others require a one-touch button, while others again require you to delve into an onscreen menu.

## NEC AccuSync LCD92V

The LCD92V is one of the weaker models we tested in terms of specs, as it had comparatively low contrast and brightness levels and a slow 16ms response time. It couldn't handle our extreme greyscale test, with near-whites disappearing, while near-blacks were nicely visible. However, the pixel-tracking/phase lock test produced good results all round, with no phase-locking issues and no colour errors.

Gameplay testing showed no visible tearing or smearing, but we did notice that an off-centre horizontal side view revealed a general colour cast that turned black into a slight green. DVD movie playback wasn't too bad, although we had to be careful with the brightness or risk crushing brighter areas of the image.

The LCD92V's onscreen display controls were easy to find, but impossible to read.

**7** Price: \$580 Contact: NEC Phone: 13 16 32 Web: www.nec.com.au + No image ghosting – Poor EGS performance – Background colour hue

NEC is one of a number of vendors simply etching the labels into the bezel, making them difficult to read. The bezel itself is also one of the thickest we've seen, so we think it's time NEC modernised its LCD



monitor design.

Overall, the LCD92V is typical of most LCD monitors: some good features undone by a couple of drawbacks.

## Philips 190S6

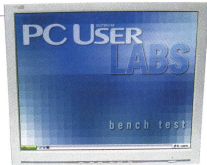
The 190S6 is Philips's entry-level 19in TFT monitor (Philips has a reasonable selection on offer) and while its fast response time gives it good gaming potential, the image quality itself needs a little work. Yet in a contradictory way, the 190S6 produced one of the sharpest images we've seen yet – just excellent clarity all the way. And while this held up on the extreme greyscale test, a

pink hue was clearly visible on our pixel-tracking/phase lock test on the upper left-hand side of the display.

That said, its response rate held up well on 3D gaming tests, with no smearing or ghosting visible. DVD movie playback was generally OK as well, but we did notice an odd green cast over the video. It was subtle, but definitely noticeable. The vertical viewing angle was pretty ordinary, showing clear

colour inversion errors when seen from below. We hate to sound like a broken record, but fast response times don't guarantee great image quality.

For Windows work, this one wouldn't be too bad, but we'd only recommend it for 3D gaming and personal DVD viewing at a pinch. It's definitely not suitable for home theatre viewing.



**7** Price: \$539 Contact: Philips Phone: 1800 009 300 Web: www.philips.com.au + Very sharp image + No image ghosting – Poor vertical viewing angle

## Acer AL1913sm

The AL1913sm is one of the older-style 19in models, with a comparatively slow 23ms response time. That means that while its viewing angles are excellent, its ability to handle serious gameplay is minimal and its DVD playback quality marginal at best. The amount of image ghosting visible on this monitor on DOOM 3 made it just unplayable.

Its contrast levels of 800:1 are among the best you'll see, but from our experience it appears you can only get the very good contrast this monitor displays by having a slow response time.

Being the slowest monitor in the roundup, Acer has also realistically priced this as the cheapest 19in LCD we looked at, with a street price of around \$470. Built-in speakers plus the ability to feed in a signal via the VGA or DVI inputs certainly help this unit's overall value, ☺

### HOW WE TESTED

Testing monitors is largely about visual perception: there are no readily available tools that offer truly quantitative results. However, we've devised a series of visual tests that enable us to get to the bottom of image quality.

- ◆ **Extreme greyscale (EGS) test.** This test forces each monitor to display a series of colour swatches at various shades of grey approaching white and black (these are called near-whites and near-blacks). These are displayed on a background of perfect white and perfect black respectively. A good-quality monitor will display near-whites and near-blacks so that they are still distinguishable in their varying degrees from the background colour. Poor-quality monitors will lose these 'near' colours into the background colour. A monitor that produces poor EGS test results generally has a low contrast ratio, which results in poor detail in darker areas in DVD movies and 3D games such as DOOM 3.
- ◆ **Pixel-tracking/phase lock testing.** This is a new test we're using that shows how well each monitor displays interlocking greyscale pixels. A good-quality monitor will show this test screen as a clean, pure grey image. A poor-quality monitor will often show up a particular colour cast, typically pink, in one area of the screen. Another fault, which tests the monitors' ability to lock onto the video signal correctly (known as 'phase locking') is digital noise on the screen. This should be corrected by the monitor's autotune function, but may require you to manually adjust the picture using the onscreen menu options. Very poor-quality monitors

are those that exhibit colour errors and digital noise that can't be corrected.

- ◆ **DVD movie playback.** Here we use a DVD movie to check for contrast levels, particularly in darker and lighter areas. A poor contrast level can show up as either poor detail in darker areas such as shadows, but it can also appear as crushed tones where skin tones or white clouds appear as perfect white, rather than as continuously varying shades.

- ◆ **3D game playback.** Here, we use DOOM 3 to check not only contrast problems, but also ghosting or smearing issues. Monitors with too slow a response time will show ghosted images of previous frames. Bad ghosting makes gaming all but impossible.

- ◆ **Viewing angles.** With home theatre growing in popularity, viewing angles of monitors (the angle at which it's possible to view the screen and still see the image correctly) are very important. You can't sit everyone in a direct line perpendicular to the monitor screen, so a good wide viewing angle, both horizontally and vertically, is vital. Just about all LCD monitors have good horizontal viewing angles, but many suffer poor vertical angles. On these monitors, viewing the image from below the centre of the screen will often appear as though you're looking at a negative of the real thing. This is called 'colour inversion' and it's a serious problem with many LCD monitors.

Each of these tests is scored out of 10, which together with each monitor's features and price, go towards making up the final rating out of 10.

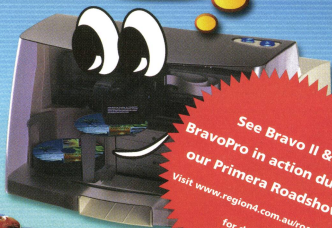
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but this really is a monitor that is better suited to the business world. It would be ideal as a presentation monitor,

thanks to its wide viewing angles, for example. However, for anything else — like movies and gaming — forget about it.

#### 19in LCD MONITORS: HOW THEY COMPARE

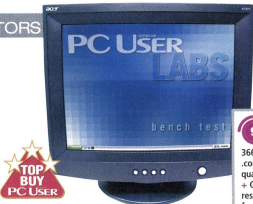
Model	Acer AL1913sm	BenQ FP91V+	HP L1902	LG Flatron L1905	Mitsubishi DV1975B	NEC AccuSync LCD92V	Philips 19056	ViewSonic VX924
Price	\$469	\$799	\$599	\$529	\$579	\$580	\$539	\$749
<b>SPECIFICATIONS</b>								
Native resolution (pixels)	1,280 by 1,024	1,280 by 1,024	1,280 by 1,024	1,280 by 1,024	1,280 by 1,024	1,280 by 1,024	1,280 by 1,024	1,280 by 1,024
Response time (ms)	23	6	16	12	8	16	8	4
Contrast ratio	800:1	450:1	500:1	500:1	550:1	450:1	500:1	550:1
Brightness (cd/m <sup>2</sup> )	300	400	250	250	270	250	250	270
Dot pitch (mm)	N/A	0.294	0.294	N/A	0.294	0.294	0.294	N/A
Horizontal scanning frequency	N/A	31 to 81kHz	N/A	30 to 83kHz	30 to 83kHz	31 to 81kHz	30 to 83kHz	30 to 82kHz
Vertical scanning frequency	N/A	56 to 76Hz	N/A	56 to 75Hz	55 to 75Hz	56 to 75Hz	56 to 76Hz	50 to 75Hz
<b>INPUTS</b>								
VGA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DVI	Yes	Yes	No	No	Yes	No	No	Yes
S-Video	No	No	No	No	No	No	No	No
Composite video	No	No	No	No	No	No	No	No
<b>FEATURES</b>								
Height adjuster	No	No	No	No	Yes	No	No	No
Swivel base	Yes	Yes	No	No	No	No	No	No
Integrated AC power	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Detachable VGA cable	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Speakers (power rating)	Two 2.5W	Two 2W	N/A	N/A	N/A	N/A	N/A	N/A
Autosync on signal	Yes	Yes	Yes	No	Yes	Yes	No	Yes
One-touch auto setup	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>TEST RESULTS (out of 10)</b>								
Extreme greyscale (EGS)	8	8	7	8	9	7	9	7
Pixel tracking/phase lock	9	9	7	6	9	9	6	7
Horizontal viewing angle	9	8	8	8	8	8	8	8
Below perpendicular viewing angle	9	6	6	6	6	6	6	7
Windows general use	8	9	8	8	9	8	8	8
PC gaming (DOOM 3)	5	8.5	7.5	8	9	8	8	8
DVD movie (Pearl Harbor)	6	8	7	7.5	7.5	7	7	7

#### 19IN CRT MONITORS

### Acer AC915

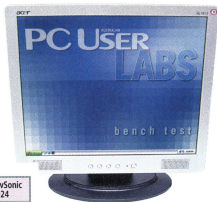
With CRT monitors quickly going the way of the dinosaur, the AC915 is arguably the best of what's left on the market. In terms of resolution, it's the lowest of the four we tested, with 1,600 by 1,200 pixel at 75Hz maximum. However, its styling was clean and its tube bezel not too overpowering. The relatively short-neck tube also means it doesn't take up your entire desktop.

We found this one ideal for movies and games. The smooth video playback made



DVD watching a pleasure, the resolution on offer is better than all of the 19in LCD monitors, and it looks fantastic on games such as *DOOM 3* 🎮

**7** Price: \$469  
Contact: Acer  
Phone: 1300 366  
567 Web: [www.acer.com.au](http://www.acer.com.au)  
+ Cheapest LCD monitor we tested + Very good viewing angles + Slow response time results in image ghosting



### ViewSonic VX924

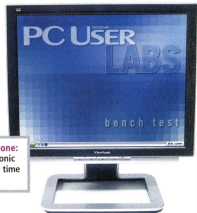
The VX924 is one of the new breed of super-fast 4ms monitors starting to make a splash on the market. That response time is designed to remove any ghosting from 3D gaming or DVD movies and, for the most part in our testing, it did exactly that. But it had a couple of other issues.

Firstly, we found it difficult to balance extreme greyscales and simply couldn't get it to display both near-blacks and near-whites. That translates into a lower contrast range than we expected. This showed up on our DVD movie playback test, with some crushing of whites. We also noticed some phase lock noise on our pixel-tracking test, showing that its autosync option had trouble locking onto this test image.

Secondly, its viewing angle from below was pretty awful. As such, this isn't a monitor we'd choose as part of a media centre PC setup for your lounge room. On the other hand, for 3D gaming, it would do well, and for Windows desktop use, it was one of the sharpest LCD monitors we looked at.

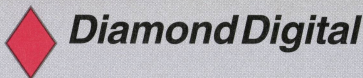
Overall, this is not a bad monitor, but given the asking price — \$200 more than most others — it doesn't offer enough.

**9** Price: \$245  
Contact: Acer  
Phone: 1300  
366 567 Web: [www.acer.com.au](http://www.acer.com.au) + Good image quality throughout + Good 1,600 by 1,200 resolution + Great value for money



**7** Price: \$749 Contact: Synnex Phone: 1300 100 100 Web: [www.viewsonic.com.au](http://www.viewsonic.com.au) + Fastest 4ms response time — Not the best contrast — Very expensive





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high specifications  
and great value price  
weren't enough to  
raise your eyebrows.



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Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Rd, Rydalmere NSW 2116 Ph: (02) 9684 7777 Fax: (02) 9684 7208 [www.MitsubishiElectric.com.au](http://www.MitsubishiElectric.com.au)

and *Splinter Cell Chaos Theory*. Obviously, there were no problems with viewing angles either, and the onscreen menu controls are well located and easily operated.

Image quality was excellent all round, with good sharpness and contrast making it a great option for home or office. And with Acer giving it a three-year onsite warranty, it's easy to replace if something should go wrong.

Its only real flaw is that it's not a flat-screen model, although that said, the unit's curvature isn't great and certainly didn't put us off while conducting our testing.

The AC915 doesn't have the best specs in this lineup, but it certainly has excellent styling and picture quality. For under \$250, it's got a pretty damn good price, too.

## LG Flatron T910B

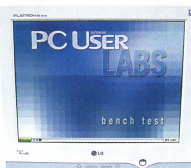
The T910B matches the ViewSonic G90f+ for technical specs, able to hit 2,048 by 1,536-pixel resolution at 60Hz, or a more reasonable 1,600 by 1,200 pixels at an almost flicker-free 75Hz. Its diagonal dot pitch of 0.24mm means it has the smallest pixels of all four monitors, potentially giving you the best picture. We certainly have no complaints here.

The T910B's extreme greyscale results were excellent, although we did notice a small amount of moiré patterning on the pixel mapping test. However, this was greatly reduced by adjusting the settings with the onscreen menu controls.

Gameplay and DVD movie

**Price:** \$349 **Contact:** LG Electronics **Phone:** 1800 725 375 **Web:** [www.lge.com.au](http://www.lge.com.au) + Excellent resolution + 1,600 by 1,200 pixels at 75Hz refresh rate + Smallest dot pitch

playback quality were both excellent, as you would expect. It's a real pity that the CRT market is drying up because it's impossible to go past these screens for DVD and 3D gaming; they can't be beaten for image smoothness and quality. Line up a 19in CRT and TFT monitor together with the same video signal and it's just so obvious that CRTs do video and gaming much better.



The fact that the T910B can get to 1,600 by 1,200 pixels at 75Hz also makes it a great option for serious 3D gaming at these higher resolutions. Unfortunately, the onscreen controls themselves aren't our favourite, as they're too small and poorly labelled. Many vendors are simply etching these labels into the bezel plastic and with no colour differentiation, you can barely see — let alone read — them.

Overall though, this is still a fine monitor.

### 19in CRT MONITORS: HOW THEY COMPARE

Model	Acer AC915	LG Flatron T910B	Mitsubishi DV992A	ViewSonic G90f+
Price	\$245	\$349	\$259	\$330
<b>SPECIFICATIONS</b>				
Max. resolution at max. refresh rate	1,600 by 1,200 at 75Hz	2,048 by 1,536 at 60Hz	1,920 by 1,440 at 60Hz	2,048 by 1,536 at 60Hz
Dot pitch (mm)	0.26	0.24	0.25	0.25
Flat/curved tube	Flat	Flat	Curved	Flat
Video bandwidth (MHz)	202	203	158	275
Vertical scanning frequency	30 to 98kHz	30 to 98kHz	30 to 92kHz	30 to 97kHz
Horizontal scanning frequency	50 to 160Hz	50 to 160Hz	50 to 160Hz	50 to 180Hz
Dimensions (W by H by D in mm)	435 by 446 by 455	443 by 450 by 458	440 by 447 by 441	448 by 465 by 459
Weight (kg)	Not disclosed	21	19.4	22
<b>FEATURES</b>				
Input	VGA	VGA	VGA	VGA
Height adjuster	No	No	No	No
Swivel base	Yes	Yes	Yes	Yes
Integrated AC power	Yes	Yes	Yes	Yes
Detachable VGA cable	No	No	No	No
Speakers (power rating)	N/A	N/A	N/A	N/A
<b>TEST RESULTS (out of 10)</b>				
Extreme greyscale (EGS)	9	9	6	8
Pixel-tracking/phase lock	10	8	9	8
Windows general use	8.5	8	8	8.5
PC gaming (DOOM 3)	9	9	7	9
DVD movie (Pearl Harbor)	9	9	7	9

## ViewSonic G90f+

The G90f+ was technically the most potent 19in CRT monitor we looked at, with a high 275MHz video bandwidth and a huge maximum resolution of 2,048 by 1,536 pixels. Interestingly though, we could only get to 1,920 by 1,440 pixels using our MSI GeForce 7800 GTX card and the latest ForceWare 77.72 driver software from Nvidia.

In terms of image quality, we found no problems with this model. It handled extreme greyscales exceptionally well and showed no pixel noise or colour errors on the pixel-tracking test. The good extreme greyscale response set it up nicely for our game and DVD movie playback tests, with excellent results all round.

If we had any complaints, it would be the anchored VGA cable and the bulkiness of the unit. Anchored cables become a problem when they're damaged because the whole monitor has to be returned for servicing, rather than just buying a new cable.

The G90f+ isn't the most attractive of monitors out there either, nor is it the smallest. This unit also has a fairly long-neck CRT tube compared with the

**Price:** \$330 **Contact:** Synnex **Phone:** 1300 100 100 **Web:** [www.viewsonic.com.au](http://www.viewsonic.com.au) + Excellent resolution + Excellent image quality + Bulky unit and anchored VGA cable



Acer and Mitsubishi monitors, and it's surprisingly heavy. However, long-neck tubes tend to give a better image quality because the electron beams that create the image don't have to be bent through as large an angle to hit the extreme sides of the screen. That makes it easier to keep the beams in focus and produce a better image. This monitor's tube face is set back quite a way inside the front bezel, which gives the impression that the bezel itself was big and ugly.

All up though, this is a quite a good monitor, especially for serious gamers who want more than the typical 1,280 by 1,024-pixel resolution.

## Mitsubishi DV992A

On paper, the DV992A is a fine monitor, offering up to 1,920 by 1,440-pixel resolution at 60Hz, and at a surprisingly low price. However, our test unit exhibited a noticeable lack of contrast. We noticed that the general scan (or raster) lines of this monitor were clearly visible, even when the unit was supposed to be displaying black. We cannot

confirm it, but it appeared as though the black reference level was set too high, affecting the contrast. This was noticeable in all our tests. Extreme blacks on our greyscale test were just non-existent and no amount of tweaking of the brightness and contrast levels could fix it. The pixel-tracking/phase lock test produced fine results, with no mapping errors or digital noise present.

Gameplay, particularly *DOOM 3*, looked ordinary and our DVD movie test showed up the lack of contrast. We also found the labelling of the onscreen control buttons too hard to read. The styling is quite reasonable though, and this monitor has the shortest neck tube we tested, which means less space taken up on your desk. But all up, there are better models to choose from.



**7** Price: \$259 Contact: Mitsubishi Electric Phone: (02) 9684 7777 Web: www.mitsubishi-electric.com.au + High resolution + Low price - Low contrast range

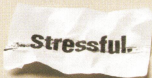
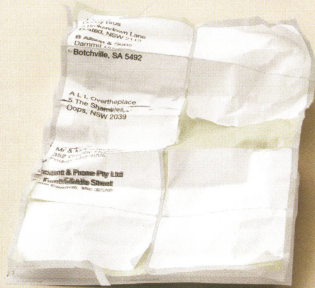
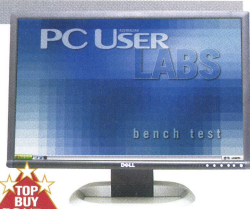
## 20IN OR LARGER WIDESCREEN LCD MONITORS

## Dell 2405FPW

Unfortunately, Dell could not (or would not) submit any monitors for this story. However, we reviewed this monitor in a previous issue and it was just so damn good, it needed including in this story. The 2405FPW is easily the best TFT LCD monitor we've seen, period. It basically does everything right: it has

terrific viewing angles all round, which is a great start for a sub-20ms monitor, and it's still fast enough to handle 3D games and movies without any problem. Its high 1,920 by 1,440-pixel resolution is ideal for Windows, gaming and even HDTV. Not to mention that it comes at an awesome price of just

**9** Price: \$1,620 Contact: Dell Phone: 1800 812 393 Web: www.dell.com.au + Excellent image quality + Big screen + Awesome value



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With DYMO LabelWriter there are no more jams, no more crumpled up sheets, no more waste. It plugs into your PC or Mac and sits on your desk printing up to 32 perfect labels a minute. It has its own software and links with other popular software too. Choose from up to 40 label types (address, shipping, CD/DVD, file folders, you name it), print one label or hundreds. Check it out on our website - [www.dymo.com.au](http://www.dymo.com.au)

**DYMO**  
THE EASIER, THE BETTER

☛ \$1,620. For a 24in widescreen monitor, that's bloody brilliant. You won't find a 24in LCD TV that looks anywhere near as good as this at any time of the price.

It handles VGA and DVI inputs in addition to component, S-Video and composite video. If ever there's been an LCD monitor ripe for home theatre use, this is definitely it. We've been quite vocal in our dislike for most of the LCD monitors that have come to market, but Dell's 2405FPW is the one unit we think actually hits the mark for image quality and price. And after testing for this roundup, we honestly don't think you'll find a better widescreen monitor.

## Philips 200W6

If you're after a widescreen LCD monitor, but the budget just won't stretch to the 24in Dell model, this 200W6 from Philips could be the next best thing. Its \$1,099 price tag makes it great value (and you can get it even cheaper if you shop around), plus its image quality isn't bad either.

It performed well in all of our tests, which is saying something, and it even comes with built-in stereo speakers. Its native resolution of 1,650 by 1,050 pixels makes it ideal for HDTV video playback, and its 16ms response time is a common thread among all the monitors in this category. Both

of our greyscale tests were good, but not perfect. Yet given what else we saw this month, they were good enough.

Viewing angles in both the vertical and horizontal directions were very good, although we did notice a pink hue come over the screen as soon as we went off-centre horizontally. This appears to be a common issue with screens offering good viewing angles. Gameplay testing was quite good, with only the slightest

hint of ghosting.

For media centre use, this isn't a bad choice, but the lack of composite, S-Video or component video inputs, along with some little niggling issues (including very tiny onscreen menu controls), just take a little of this unit's shine away.

### WIDESCREEN LCD MONITORS: HOW THEY COMPARE

Model	BenQ FP231W	Dell 2405FPW	NEC MultiSync LCD4010	Philips 200W6	Philips 230W	ViewSonic VP231wb
Price	\$2,599	\$1,620	\$8,000	\$1,099	\$3,499	\$2,799
SPECIFICATIONS						
Native resolution (pixels)	1,920 by 1,200	1,920 by 1,200	1,366 by 768	1,680 by 1,050	1,920 by 1,200	1,920 by 1,200
Response time (ms)	16	16	16	16	16	16
Contrast ratio	500:1	1000:1	800:1	600:1	500:1	500:1
Brightness (cd/m²)	250	500	500	300	250	250
Horizontal scanning frequency	N/A	N/A	31 to 91kHz	30 to 93kHz	30 to 94kHz	30 to 92kHz
Vertical scanning frequency	N/A	N/A	50 to 85Hz	56 to 85Hz	56 to 85Hz	24 to 85Hz
INPUTS						
VGA	Yes	Yes	Yes	Yes	Yes	Yes
DVI	Yes	Yes	Yes	Yes	Yes	Yes
S-Video	Yes	Yes	Yes	No	Yes	No
Composite video	Yes	Yes	Yes	No	Yes	No
FEATURES						
Height adjuster	Yes	Yes	No	No	No	Yes
Swivel base	Yes	Yes	No	Yes	Yes	Yes
Portrait mode	No	No	No	No	No	No
Integrated AC power	No	Yes	Yes	Yes	Yes	No
Detachable VGA cable	Yes	Yes	Yes	Yes	Yes	Yes
Speakers (power rating)	N/A	N/A	N/A	Two 2W	Two 3W	N/A
Autosync on signal	Yes	Yes	Yes	Yes	Yes	Yes
One-touch auto setup	Yes	Yes	Yes	Yes	Yes	Yes
TEST RESULTS (out of 10)						
Extreme greyscale (EGS)	6	N/A	7	8	4	6
Pixel mapping	6	N/A	7	9	7	7
Horizontal viewing angle	9	9	9	8	8	9
Below perpendicular viewing angle	9	9	9	9	9	9
Windows general use	7	9	8	8	7	7.5
PC gaming (DOOM 3)	6	9	7	8	5.5	6
DVD movie (Pearl Harbor)	6	9	7	8	5.5	6

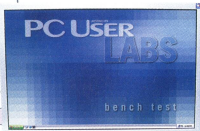
**7.5** Price: \$1,099  
Contact: Philips  
Phone: 1800 009  
300 Web: www.philips.com.au + Reasonable image quality + Nice price – No TV video inputs



## BenQ FP231W

In comparison to Dell's excellent 2405FPW, most of the other monitors in this group failed to live up to the benchmark. At 23in, the FP231W is just fractionally smaller than the 2405FPW, but unfortunately, it couldn't match the Dell for image quality. The big overriding issue with this model is the poor contrast. At 500:1 on paper, it's as good as most 19in models, but in practice, it performed dismally on our extreme greyscale tests, with near-whites and near-blacks just not visible.

There was also a noticeable pink cast on our pixel-tracking/phase lock test and considerable noise that we could not fix with the onscreen controls. Gameplay, especially with DOOM 3, was almost a



**6** Price: \$2,599  
Contact: BenQ  
Phone: (02) 9352  
8800 Web: www.benq.com.au + Excellent height adjuster – Poor contrast – Too expensive



waste of time, as most of the dark areas simply melded into the grey background. The same happened on DVD movie playback.

On the upside, the height adjustment and swivel base of this unit is just excellent and

matches the Dell nicely.

The viewing angles are also fantastic, but with such low contrast, we'd have to question whether it's worth the effort. At \$2,599, the price is nowhere near as good as the Dell, but still better than some.

## NEC MultiSync LCD4010

The prize for the largest LCD screen we tested goes to NEC's LCD4010, with its massive 40in viewable area. It's a huge display and the weirdest thing to use when you're running a Windows desktop, it's so big. However, the glaring omission in our book is

resolution. The Dell 2405FPW can hit an excellent 1,920 by 1,440 pixels, but this 40in screen has a maximum resolution of only 1,366 by 768 pixels, which is disappointing.

However, NEC calls this unit one of its 'public display'

## ViewSonic VP231wb

The VP231wb suffered from many of the same problems as Philips's 230W and it wouldn't surprise us if both use the same LCD panel. The VP231wb has the same 1,920 by 1,200-pixel resolution, 16ms response time and exhibited many of the same image problems.

First up, near-blacks on our extreme greyscale test were non-existent, and this showed up on our DVD movie and 3D gaming tests. It also didn't sync

up the video correctly when we changed the resolution on *DOOM 3*. It's important to be able to vary the game resolution to pick up gaming speed with older graphics cards. The VP231wb left a black edge on the right side of the screen when we changed the gaming resolution on *DOOM 3*, and it was the only monitor to do so.

On the positive side, viewing angles here were excellent in all directions, but the lack of

## Philips 230W

The big brother to the 200W6 is this 23in 230W. With its extra size comes extra resolution, pushing the native pixel count to 1,920 by 1,200. Unfortunately, one of the missing features here was contrast. The extreme greyscale test showed this up clearly, with virtually no sign of either near-whites or near-blacks. That showed up in our 3D gaming and DVD movie playback tests.

While the screen's response time of 16ms is enough to give virtually no ghosting, the lack of contrast on our test unit was alarming. *DOOM 3* is a dark game at the best of times, but almost all the detail of the game through our GeForce 7800 GTX card all but disappeared. The same thing on DVD — the crushed contrast resulted in blacks that were grey and skin tones that became white.

The 230W is loaded with features such as a multifunction

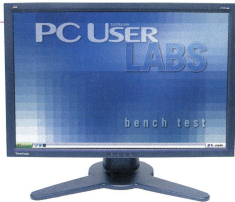
**6** Price: \$8,000  
Contact: NEC  
NEC Phone: 13 16 32 Web: [www.nec.com.au](http://www.nec.com.au) + Bloody big screen  
— Resolution too low — What was that price again?



monitors, which suggests it's meant to be used at a significant distance as a video monitor, rather than as a Windows monitor. That comes through in the dot pitch, which is 0.83mm diagonal or roughly three times the size of the pixels in most 19in TFT LCD models. The unit has a reasonable 16ms

response time, which showed up as a small amount of smearing on 3D games, yet it still managed to produce excellent viewing angles all round. As big as it is, it doesn't come close to matching the Dell for quality and certainly not for price.

**6** Price: \$2,799  
Contact: Synnex  
Phone: 1300 100 100 Web: [www.viewsonic.com.au](http://www.viewsonic.com.au) + Good viewing angles — Poor contrast — Too expensive

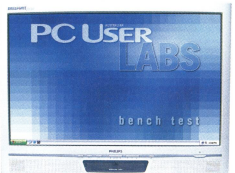


contrast didn't bring games or movies to life. The lack of any composite, component or S-Video inputs doesn't help either.

The bottom line is that with

Dell's 2405FPW priced at \$1,620, the ViewSonic VP231wb just can't compete.

flash memory card reader and USB hub built into the front of the monitor. However, when the image quality isn't great, the worth of such features is questionable at best. The real killer here is the price. At \$3,499, you could buy two Dell 2405FPW monitors. Now that would be pretty darn interesting...



**6** Price: \$3,499 Contact: Philips  
Phone: 1800 009 300 Web: [www.philips.com.au](http://www.philips.com.au) + No ghosting on games  
— No contrast on games — Way too expensive

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# Nvidia unleashes GeForce 7800 GTX

**Forget the GeForce 6800 Ultra and the Radeon X850 XT — there's a new high-performance video card in town. Darren Yates reports.**

Graphics card vendor Nvidia pushed 3D gaming to new heights this month with the release of the GeForce 7800 GTX PCI Express graphics card. Based on Nvidia's latest G70 graphics processor unit (GPU), the 7800 GTX delivers an astonishing performance gain over the previous generation kings, the GeForce 6800 Ultra and Radeon X850 XT.

Using Ubisoft's *Splinter Cell Chaos Theory* (SCCT) game in addition to our regular id Software hit, *DOOM 3*, and our new world-exclusive UserBench Splinter Cell CT and UserBench DOOM 3 benchmark engines (see 'Introducing the new UserBench tests' on page 62), we tested the 7800 GTX and found the lofty claims being made of this card are, surprisingly, mostly true. We also took this opportunity to test out some older cards to see how they compare.

## GeForce 7800 GTX details

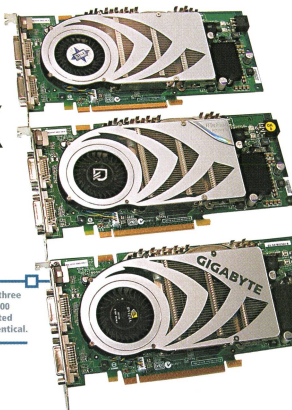
The 7800 GTX is the street name for Nvidia's new high-end card based on the G70 core. It effectively kicks off the company's GeForce 7000 series of cards.

The core processor in this new GPU (GPU) runs at a clock speed of 430MHz, while its 256MB of onboard memory cranks along at 1.2GHz. But the biggest gains from this new GPU are in the processing engine; vertex engines (processing coordinates of intersecting points of lines and shapes) go up from six in the GeForce 6800

Ultra (NV40) to eight. Pixel pipelines that process colour, depth and shade for individual pixels of each frame increase from 16 to 24. In layman's terms, these are significant increases that help to give the 7800 GTX its phenomenal performance scores, particularly at higher resolutions, such as 1,600 by 1,200 pixels and up.

The other great piece of news is that Nvidia has managed to shoehorn the 7800 GTX back into a single-slot design. The 6800 Ultra was, with few exceptions, an almost exclusively double-slot design card, which means it took up a considerable amount of

Look similar? All three of the GeForce 7800 GTX cards we tested were virtually identical.



precious case space.

The 7800 is around 10mm longer in length than the standard 6800 Ultra, and while the single-slot width gives it a chance in most micro PC cases, the length is causing problems with some motherboards. For

example, MSI's K8N-SLI Platinum is reported to have a capacitor on the board that blocks the card's installation.

## What we found

We received four 7800 GTX cards for testing this month.

## NVIDIA GEFORCE 7800 GTX CARDS: HOW THEY COMPARE

Graphics card model	Gigabyte GV-1X78X256V-B	Leadtek WinFast PX7800 GTX TDH MyVIVO	MSI NX7800GTX-VT2D256E
Price	\$955	\$988	\$899
Games	Joint Operations: Typhoon Rising, Xpand Rally	Splinter Cell Chaos Theory, Prince of Persia Warrior Within	The Chronicles of Riddick: Escape from Butcher Bay
Multimedia software	CyberLink PowerDirector 3 ME	Ulead VideoStudio 8 SE DVD, Ulead DVD Movie Factory 3 SE, Ulead Cool 3D	None
Hardware	VIVO-to-component S-Video breakout box, DVI-A-to-VGA converter	VIVO-to-component S-Video converter cable, two DVI-A-to-VGA converters	S-Video extension cable, VIVO-to-component S-Video converter cable
<b>TEST RESULTS</b>			
<b>UserBench Splinter Cell CT (1.0.3)*</b>			
640 by 480	111.43	126.26	126.27
800 by 600	126.7	126.92	126.97
1,024 by 768	118.4	118.43	118.39
1,280 by 1,024	92.91	92.94	92.91
1,600 by 1,200	67.68	67.7	67.68
<b>UserBench DOOM 3 (1.0.0)*</b>			
640 by 480	98	97.5	97.9
800 by 600	98.2	98.2	98.2
1,024 by 768	98.3	98.3	98.3
1,280 by 1,024	96.5	96.5	96.5
1,600 by 1,200	87.9	88	87.9

\* All benchmark results are in average frames per second (fps). In all cases higher scores are better. Please note: all prices quoted were the cheapest available on [www.statice.com.au](http://www.statice.com.au) as at July 7, 2005.

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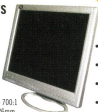


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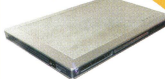
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☛ We've heard from vendors that retail stock levels are good, so you should have no trouble picking one up. However, if you're in the market for one of these cards, one thing is worth noting: every test card we received was basically identical. While we can't confirm it, it looks as though all of the cards are either coming out of the same factory, or all the vendors are sticking very closely to Nvidia's reference design.

Leadtek was the one company to offer anything different, and provided a BIOS update that reportedly cranks up the clock speed from 430MHz to 450MHz and keeps your warranty intact. However, we were unable to get the BIOS to install correctly and were still waiting for a response from Leadtek at the time of printing. Stay tuned for more on this one.

## GeForce 7800 GTX performance

The most impressive feature of the 7800 GTX is its performance gain over previous-generation cards. This increases the higher the resolution you choose; in SCCT at 1,600 by 1,200-pixel resolution, it left the 6800 Ultra behind by as much as 41% and the X850 XT by 27%. At a more typical 1,024 by 768 pixels, the 7800 GTX outpaced the X850 XT by 17% and the 6800 Ultra by 27%.

However, one other thing became clear to us from our UserBench Splitter Cell CT testing: switching on all of the advanced graphics effects available from Shader Model 3.0 (SM3.0) still pulls down the 7800 GTX's performance levels. This is particularly noticeable when you switch on High Dynamic Range (HDR) rendering. But even so, this is one heck of a graphics card.

## Radeon X850 XT comparison

The GeForce 7800 GTX shows the X850 XT (ATI's current top-of-the-line card) a clean pair of heels, although the gap varies considerably depending on the game you choose. For example, in *DOOM 3*, the 7800 GTX had

a handsome 51.8% lead over the X850 XT at 1,600 by 1,200-pixel resolution. But in SCCT, the gap narrows to a still-healthy 26.9%.

(For point of reference, the X850 XT actually outperformed the GeForce 6800 Ultra on SCCT but was miles behind on *DOOM 3*. As we said, choosing your card can depend as much on your favourite game as it does your wallet.)

## SLI speed and older cards

Previous testing had shown us that Nvidia's Scalable Link Interface (SLI) made little difference to the overall performance with *DOOM 3*, but the results from both of our new benchmark engines show SLI can provide benefit at higher resolutions.

While our UserBench

*DOOM 3* results are consistent with previous testing, showing slower performance than a single card at lower resolutions, they also show *DOOM 3* gets a wriggle on at higher resolutions.

UserBench Splitter Cell CT gave similar results, particularly with the 7800 GTX cards. These showed lower scores at lower resolutions compared to a single 7800 card, but gained even more significant increases the higher in resolution you go.

Two 7800 GTX cards in SLI basically show no signs of slowing down on *DOOM 3* and only marginal drops in frame rate on SCCT. These results clearly shift the bottleneck blame back into CPU territory, which in our case, was an already fast AMD Athlon 64 4000+ processor.

More remarkable was the

performance gains using two GeForce 6600 GT cards in SLI mode. In *DOOM 3*, it wasn't until we hit 1,280 by 1,024-pixel resolution that SLI mode showed any benefit, but with a 33% performance gain, the advantage was immediately apparent. In practice, what's happening is that the two SLI cards are holding their performance line while the single 6600 GT card begins to groan under the workload.

Using two 6600 GTs in SLI mode, the performance gain in SCCT was nearly 100% by the time we hit 1,600 by 1,200-pixel resolution. In fact, the 6600 GT SLI performance levels held so well that they outperformed both the GeForce 6800 Ultra and Radeon X850 XT on both games at that high 1,600 by 1,200-pixel resolution. Given the sub- ☛

## GRAPHICS CARDS: HOW THEY COMPARE

USERBENCH SPLITTER CELL CT 1.0.3	Test resolution/results				
Shader Model 3.0 (no extras)* tests	640 by 480	800 by 600	1,024 by 768	1,280 by 1,024	1,600 by 1,200
Nvidia GeForce 7800 GTX SLI	112.59	120.43	119.92	119.88	112.33
Nvidia GeForce 7800 GTX	124.77	125.43	117.53	92.84	67.69
Nvidia GeForce 6600 GT SLI	110.07	115.95	104.23	77.79	56.52
ATI Radeon X850 XT	113.67	111.97	99.99	72.07	53.31
Nvidia GeForce 6800 Ultra	125.47	118.19	92.29	65.83	48.03
Nvidia GeForce 6600 GT	103.39	81.48	58.45	41.33	29.57
ATI Radeon X700 Pro	92.05	70.88	49.58	32.81	23.23
Nvidia GeForce 6600	77.37	60.11	42.72	30.10	21.46
ATI Radeon X700	82.90	63.32	44.10	29.22	20.66
ATI Radeon X600 XT	59.99	44.57	30.88	20.48	14.43
Shader Model 3.0 (with extras)* tests					
Nvidia GeForce 7800 GTX SLI	115.80	115.72	115.53	103.94	82.63
Nvidia GeForce 7800 GTX	119.54	111.53	87.38	60.00	43.83
Nvidia GeForce 6600GT SLI	108.00	91.39	66.62	45.70	31.20
USERBENCH DOOM 3 1.0.0					
Nvidia GeForce 7800 GTX SLI	93.6	94	94.1	94.1	93.6
Nvidia GeForce 7800 GTX	96.6	97.2	97.3	97.8	87.6
Nvidia GeForce 6600 GT SLI	88.4	88.7	88.8	86	76.5
Nvidia GeForce 6800 Ultra	97.1	97.6	97.2	89.5	75.9
ATI Radeon X850 XT	98.9	98	94.1	75.8	57.7
Nvidia GeForce 6600 GT	92.2	92.4	86.2	66.9	50.2
Nvidia GeForce 6600	92	88.3	72.6	50.5	36.9
ATI Radeon X700 Pro	93.1	76.4	54.8	36	24.8
ATI Radeon X700	82.5	67.3	48	31.5	21.7
ATI Radeon X600 XT	66.5	48.3	32	20.7	13.8

\*Shader Model 3.0 extras include parallax mapping, High Dynamic Range (HDR) rendering, high-quality soft shadows and tone mapping. Please note: *DOOM 3* was tested with basic settings (bilinear image filtering with no anisotropy or antialiasing). All test results listed in frames per second (fps). In all cases, a higher result is better.



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⌘ \$600 price tag for two of these excellent cards, they can prove a better investment than a GeForce 6800 Ultra or Radeon X850 XT — provided you already have an SLI motherboard.

But if you like your gaming with all the Shader Model 3.0 (SM3.0) eye candy extras, such as tone mapping and HDR rendering switched on, then two 7800 GTX cards in SLI mode is the way to go. Although turning on these features still belts the daylight out of these cards, 7800 GTX SLI provides more than two-and-a-half times the frame rate horsepower of two 6600 GTs at 1,600-by-1,200-pixel resolution — and that's huge.

#### Recommendation

While it's impossible not to be impressed by the new 7800 GTX's sheer horsepower, it's not going to be the best tool in the shed for many users.

For budget-minded semi-serious gaming, the GeForce 6600 GT is still a winner. Its performance per dollar is still

excellent and ideal for gaming up to 1,024 by 768-pixel resolution and even 1,280 by 1,024 at a stretch. For higher-resolution gaming, two GeForce 6600 GTs in SLI (if your PC

supports SLI), is a good-value proposition, giving good speed up to 1,600 by 1,200 pixels, provided you leave off the SM3.0 eye candy. But if you can't bear the thought of gaming with

anything less than 1,280 by 1,024 pixels and all the extras switched on, two GeForce 7800 GTX cards in SLI is the best (and most expensive) option available at the moment. Ⓢ

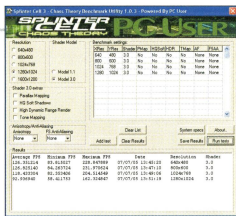
#### INTRODUCING OUR NEW USERBENCH TESTS

We've taken the opportunity with the arrival of the new GeForce 7800 GTX to upgrade our 3D benchmarking, adding new benchmarks and further improving how we operate those tests.

Ubisoft's latest instalment of the *Splinter Cell* franchise, *Splinter Cell Chaos Theory*, is based on a souped-up *Unreal Tournament 2004* graphics engine, but also provides an unrivalled array of Shader Model 3.0 control settings, along with an excellent benchmark engine.

In combination with our other regular test game, id Software's *DOOM 3*, this means we're testing both the de facto 3D gaming standards: DirectX 9 and OpenGL.

We've enhanced our testing further with the introduction of our two new world-first benchmarking engines developed by *PC User*, known as *UserBench Splinter Cell CT* and *UserBench DOOM 3*. They enable us to run up to 50 individual tests at a time, making adjustments to everything from resolution (640 by 480 through to 1,600 by 1,200 pixels), other features including Shader Models (1.1 or 3.0, where allowable) and various Shader Model 3.0 extras (parallax mapping, HDR, high-quality soft shadows and tone mapping), capturing all-important frame rate speeds in these different modes. Real-world benchmarks are the key to accurate profiling and performance testing of any PC component, and our new world-first benchmarking tools enable us to test more cards more thoroughly than ever before, and in a fraction of the time required to do it by hand.



PC User's new UserBench tests help us get to the bottom of graphics card performance.

## MOTHERBOARD REVIEW

### ASUS P5ND2-SLI Deluxe

Despite a fairly hefty price tag, the new P5ND2-SLI Deluxe from ASUS is a fine board loaded with features, not the least of which is its support for dual-core Pentium D processors right out of the box. We had planned to test another big-name board this month, but its inability to handle the new Pentium D chip left us cold.

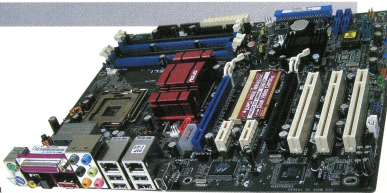
The P5ND2-SLI features Nvidia's nForce4 SLI chipset for Intel chips and has loads of other extras, including dual Gigabit Ethernet, FireWire and dual RAID options. In fact, the RAID options on this board are so extensive that you can have up to eight drives all running in RAID configuration.

The P5ND2-SLI supports 1,066MHz frontside bus speeds and DDR2 memory up to 800MHz, so it's a board that will last you well into the future. As the name suggests, it also

includes Nvidia's Scalable Link Interface (SLI) technology, so you'll be able to maximise your 3D gaming speed (even though it will likely minimise your bank account) with dual graphics cards.

One other feature worth noting is the fanless heatsink on the board's Northbridge chipset. This heatsink will get quite hot in normal use, so you'll want to make sure your case has sufficient airflow to keep it cool.

Although we tested the board with the new 2.8GHz Pentium D 820 dual-core processor, its performance was a little disappointing, failing to hit the 50 mark on our multimedia content creation benchmark. The GeForce 7800 GTX graphics card we used to test the board barely shifted its result, regardless of the resolution setting, nestling in on 82fps on *DOOM 3*.



All up, this is a highly capable board, but given our results with the 2.8GHz Pentium D processor, you'll want something faster if you're going to get your money's worth. — Darren Yates

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#### ASUS P5ND2-SLI DELUXE TEST RESULTS

VeriTest Business Winstone 2002	34.6
VeriTest Multimedia Content Creation Winstone 2003	49.8
VeriTest Business Disk WinMark 99 (KB/s)	8460
DOOM 3 3 timedemo demo1 (640 by 480) average fps	82.2
DOOM 3 3 timedemo demo1 (1280 by 1024) average fps	82.2

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In terms of sheer grunt, the PSP is superior to the Nintendo DS.



## Sony PSP

**T**he Sony PSP (PlayStation Portable) is sleek, black and oozes an indefinable cool factor that the Nintendo DS seems to lack. The PSP only has one screen, but it's clearer and wider than the Nintendo DS's dual display. The PSP also has built-in Wi-Fi (802.11b), a variety of I/O connectors (such as a USB 2.0 port, Memory Stick Duo port and infra-red port) and the ability to play movies, music and display pictures. In terms of sheer grunt, the PSP is far superior to the DS, offering near PS2-quality visuals.

The first thing you notice about the PSP is its 4.3in TFT display. It has a resolution of 480 by 272 pixels and the ability to display 16.77 million colours. Load a game and the inky blackness suddenly explodes into a dazzling array of colours and crystal clear imagery. It's a weird, almost mesmerising effect! Unlike the Nintendo DS, the PSP includes adjustable brightness settings to conserve battery power.

The PSP's small speakers can generate some decent-quality audio, but the unit really shines when used with a set of earphones. Unlike the Nintendo DS, the PSP comes standard with a set of earphones that include inline remote controls. Unfortunately, their white colour scheme clashes dreadfully with the PSP's jet black aesthetics.

The PSP uses Sony's

proprietary UMD (Universal Media Disc) format. These little suckers can store up to 1.8GB of data, so it's not really surprising that PSP games look so damned impressive. Apart from games, owners will also be able to buy movies in UMD format. Of course, disc-based media has its drawbacks and we found that Nintendo DS cartridges loaded a lot faster than PSP games.

While it may not have the cool touchscreen of the Nintendo DS, the PSP still manages to cram an ample number of controls onto the unit. The most notable of these is the nifty little analog joystick to the left of the screen. Truth be told, it's not really a joystick, but more of a sliding button that works a treat in games. Aside from the mini joystick, the PSP has four face buttons, a D-pad, left and right shoulder buttons, Home/Start/Select/Power buttons, volume controls and two media control buttons.

The PSP's startling array of I/O connectors enables owners to hook up USB 2.0 and infra-red devices, and you can even connect the console to a PC. While the unit comes standard with a 32MB Memory Stick Duo, you'll probably need a 256MB or 1GB card if you want to fully exploit the PSP's multimedia capabilities. Speaking of multimedia, you can access your music, pictures or video using Sony's intuitive Cross Media Bar interface. While you can play MP3 music files on the

PSP without converting them to Sony's proprietary ATRAC format, video files are a different story. Thankfully, there are a number of freeware programs available that will do the job nicely, such as PSP Video 9 and PSP Video Express.

At the moment, the PSP's Wi-Fi capabilities only encompass games, with up to 16 players able to play head to head in supported titles. However, rumours have been circulating online that Web browsing, file downloads and Voice over IP may all be possible at a future date via official Sony updates.

Like the Nintendo DS, the PSP uses a Lithium Ion rechargeable battery. The console's power usage has already become a matter of wide debate on the Web, with many owners complaining about limited playing time between recharges. The general consensus is that you can

expect to get around 3 hours of juice playing Wi-Fi multiplayer, about 6 hours with straight single player, and over 10 hours if you're just listening to music. Decreasing the screen brightness can also extend the PSP's battery life.

Although the PSP plays movies, music and displays pictures, it doesn't quite perform these tasks as well as other purpose-built devices. While the PSP does excel at playing games, \$400 is a lot to pay for a portable games device. Another question mark hangs over the PSP's battery life. Will owners be happy recharging the device at relatively short intervals, especially after Wi-Fi multiplayer sessions?

Our verdict remains the same though: if you're after a jack-of-all-trades portable entertainment device with oodles of street cred, then the Sony PSP is a no-brainer.

The PSP is capable of producing near PS2-quality visuals!







## Nintendo DS

The Nintendo DS is stout, silver and sports a unique folding design, courtesy of its two screens, the lower of which doubles as a touchscreen controller. It also boasts built-in Wi-Fi capabilities (802.11-based) and embedded software known as PictoChat, which, as the name suggests, allows up to 16 DS owners to swap text messages and drawings with each other — provided they are within the specified range (10 to 20 metres). But unlike Sony's PSP, the Nintendo DS can't play music or movie files.

The Nintendo DS's defining feature is undoubtedly its dual-screen design. Both screens are 3in in size, with a resolution of 256 by 192 pixels and capable of displaying 260,000 colours. We found display clarity to be at its best when the top screen is flipped back as far as it can go. We tested the DS with a range of games including *Metroid Prime Hunters* and Atari's *Retro* collection. While the in-game graphics were crisp and colourful, the Nintendo DS can't match the visual quality of the PSP's larger, 16.77 million-colour screen.

The Nintendo DS's second most distinguishing feature is its funky lower touchscreen. This control system works a treat, providing an extremely fun and intuitive way to control many games. In fact, when using the thumb button on the wrist strap, which comes standard with the DS, we found the touchscreen provides an almost mouse-like level of control, especially in 3D games. The embedded PictoChat software is also quite amusing and extremely simple to use thanks to the stylus, which slots into the back of the DS. Aside from the touchscreen, the DS has four face buttons, a D-pad, left and right shoulder buttons, Start/Select/Power buttons, and a volume control.

In terms of sound, the DS also fared pretty well, and its tiny twin speakers even managed to generate a convincing virtual 3D effect.



Price: \$199.95  
Contact: Nintendo  
Phone: (03) 9730 9822  
Web: www.nintendo.com.au  
+ Touchscreen control  
+ Compatible with GBA games  
- Can't play music or movies

The unit has a built-in microphone for voice recognition, but unlike the Sony PSP, the DS doesn't come with headphones and they must be purchased separately.

The Nintendo DS is a breeze to use and most players will find the unit's curvaceous, albeit slightly chunky, shape very comfortable. The DS also feels slightly more solid than the PSP, although you certainly wouldn't want to drop either unit. Aside from 128MB DS Game Cards, the unit also has a slot for Game Boy Advance (GBA) cartridges, providing access to a massive back-catalogue of games.

Of course, a good power source is critical to the success of any portable games console and the Nintendo DS is kitted out with a high-quality, rechargeable Lithium Ion battery. Owners can expect to get anywhere from 6 to 10 hours of playing time before the juice runs out. On a negative note, the batteries take around 4



The Nintendo DS is a fun, focused portable games machine.

*Metroid Prime Hunters* is a breeze to control using the DS's touchscreen.

hours to recharge compared with 2.5 hours for the PSP.

Nintendo has dominated the portable console market for many years now and its expertise shines through with the DS. If you're after a fun, focused portable games machine and can do without the multimedia features of the PSP, the Nintendo DS is a great device at a great price. **B**



### NINTENDO DS VS SONY PSP: HOW THEY COMPARE

	Nintendo DS	Sony PSP
Price	\$199.95	\$399.95
CPU	67MHz ARM 9, 33MHz ARM7 CPUs	333MHz PSP CPU
Display	Top screen: 3in semi-transparent reflective TFT LCD; 256 by 192 pixels; 260,000 colours Bottom screen: same specs as top screen, but with a transparent analog touchscreen	4.3in 16:9 widescreen TFT LCD; 480 by 272 pixels; 16.77 million colours; adjustable brightness (to prolong battery life)
System memory	4MB, 656KB video RAM	32MB, 4MB EDRAM
Size	Length: 149mm Width: 85mm Thickness: 29mm	Length: 170mm Width: 74mm Thickness: 23mm
Weight	275g (including battery and stylus)	280g (including battery)
Primary media format	DS Game Card — 128MB capacity	UMD (Universal Media Disc) — 1.8GB capacity
Controls	Four face buttons; D-pad; left and right shoulder buttons; Start/Select/Power buttons; volume control; touchscreen control	Four face buttons; D-pad; analog joystick; left and right shoulder buttons; Home/Start/Select/Power buttons; volume controls; two media control buttons
Integrated communications	Built-in 802.11 Wi-Fi and Nintendo's proprietary communication protocol	Built-in 802.11b Wi-Fi
I/O connectors	Game Boy Advance (GBA) Pak port, headphone jack	USB 2.0 port, Memory Stick Duo port, Infra-red port, headphone jack
Sound	Built-in stereo speakers with support for virtual surround sound	Built-in stereo speakers
Other features	Backward compatibility with GBA; embedded PictoChat software; embedded clock, calendar and alarm; built-in microphone for voice recognition; wrist strap with thumb button for touch control; two styluses for touch control; AC adaptor	Embedded Cross Media Bar interface; padded case; wrist strap; wipe cloth; earphones with inline remote controls; plays MP3 music; displays JPEG pictures; plays movies in UMD format or from a Memory Stick; AC adaptor
Battery	Lithium Ion (approx. 6 to 10 hours playing time; 4-hour recharge time)	Lithium Ion (approx. 5 to 12 hours playing time; 2.5-hour recharge time)
Release date	Available now	September 2005



ENTERTAINMENT ANYWHERE

# PSP music and video guide

**Dan Gardiner shows how to turn your PSP into a full-featured portable media player.**

**A**lthough at first glance it may look like just another gaming device, the Sony PlayStation Portable (PSP) is capable of a lot more than just games. It's a veritable multimedia powerhouse, which will let you play back your videos and music, and browse pictures as well.

## What you'll need

Before you can make use of these features, there are a few things you'll need.

◆ A 32MB Memory Stick just doesn't cut it if you want to use your PSP for movies and music. We recommend 256MB at the minimum, preferably 512MB or higher. A bigger Memory Stick will let you store better-quality and/or more media files. You should also format your Memory Stick using your PSP's Settings → System Settings → Format Memory Stick tool. This will erase *all* of the data on your Memory Stick, so back up any files you may need to your PC before you format.

◆ A PSP USB cable is essential for copying your media files from your PC to your PSP. Specifically, you need a male type A to type Mini-B USB connector. Many digital cameras use this type of USB cable, so before you run out and buy a new one, check to see if your digital camera uses one already. The PSP's USB port can be found on top of the unit, above the screen; it's directly in the centre.

## ON THE COVER DISCS

You'll find the following tools to convert audio and video for use on your PSP on this month's cover discs: PSP Video 9 1.53, CDex 1.51 and Auto Gordian Knot 2.09 beta.

◆ PSP Video 9 conversion software, included on our cover discs, for re-encoding your videos to enable the PSP to play them back.

◆ CDex (optional) for converting your digital music files into MP3 format.

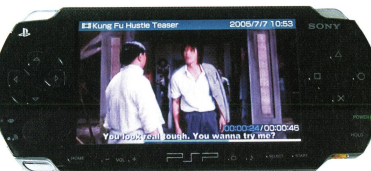
## Get videos on your PSP

Playing video on your PSP sadly isn't just a matter of copying your movie files over. The PSP cannot read most common digital video formats like DivX/ XviD, MPEG-1/2 or WMV; you'll need to convert your videos to the specific MPEG-4-based format that the PSP can read for you to be able to play them.

This is where a handy freeware application called PSP Video 9 ([www.pspvideo9.com](http://www.pspvideo9.com)) comes in. It's been specifically tailored to re-encode all sorts of video files (from unencrypted DVD .vob files, .mpeg files, .avi files and more) so they work on the PSP. It's reasonably easy to use, although it may seem a little confusing if you're new to video encoding.

For ease of use, PSP Video 9 (PSPV9) lets you choose from a range of preset encoding profiles. These let you quickly and easily select quality settings to suit your needs. The profiles are presented in the form resolution/frame rate/video bit rate/audio bit rate, and these aspects all affect the quality and file size of the final video. Here's a quick breakdown of what each setting means.

◆ Resolution. This is how big



the final video will be, measured in width by height in pixels. The PSP's LCD screen has a native resolution of 480 by 272, so you'll probably need to

downsize your videos to be able to watch them. For 4:3 aspect ratio videos (standard TV or monitor size), you'll want to use one of the 320 by 240-pixel profiles. The 368 by 208-pixel profiles are for widescreen (16:9) videos.

◆ Frame rate. This controls how smooth the video playback is. The PSP can only play back video at two frame rates: 29.97 frames per second (fps) or 14.985fps. This means that if your video is in PAL format (25fps) or at film speed (24fps), PSPV9 will try to adjust its frame rate, too. We recommend using 29.97fps for everything except animation, which can usually handle the slower speed without becoming visually jerky.

◆ Video bit rate. This controls how compressed, and therefore both how big (in terms of file size) and how detailed, the video is. A higher bit rate equals higher-quality video, but bigger file sizes. The 'QB' settings (QB4, QB7 and QB10) use variable bit rate (VBR) encoding, which can help reduce your file sizes while maintaining quality. QB4 is the highest quality; QB10 the lowest.

◆ Audio bit rate. Just like when you're ripping audio CDs, the bit rate here determines the quality and file size of the audio component of your movie. A setting of 96Kbps or higher is generally what we use.

You'll also find a range of profiles based on a type of video source — for example, 'Movie (0 — 2hrs)' — that are useful if you

The PSP is more than just a gaming machine — you can use it to play videos and music, too.

want to ensure your video will fit onto a 512MB Memory Stick.

In addition to these default profiles, you can create your own using the Setup → Profiles tab. It will help to have a grasp of the basic results you get from different profiles before you start dabbling here, so we recommend using the defaults until you're familiar with the way each setting affects quality.

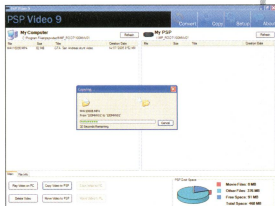
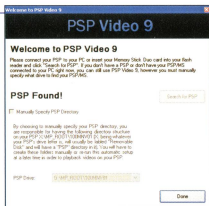
## Caveats

Before you start using it, you should be aware that PSPV9 does have some flaws, and it's not 100% foolproof just yet. The most significant problem we encountered was in relation to frame rates when converting videos. In particular, if your source video is 24fps (film speed) or 25fps (PAL video speed) rather than the native 29.97fps (NTSC video speed) that the PSP supports, PSPV9 sometimes has issues synchronising the audio and video correctly. One way around this is to try using a different quality profile or, if your source video uses VBR, convert it to a constant bit rate using Auto Gordian Knot ([www.autogk.me.uk](http://www.autogk.me.uk)) before you try processing it with PSPV9. We've included Auto Gordian Knot on the cover discs for your convenience, but please see the Web site for an FAQ on using it. There's no one way around the audio sync issue, so check out [www.pspvideo9.com/forums](http://www.pspvideo9.com/forums) for more help if you encounter problems.



## STEP BY STEP PUT A MOVIE ON YOUR PSP

**1** Connect your PSP to your PC via the USB cable, turn on the PSP and click Settings → USB Connection. Start PSP Video 9 and you should see a Welcome screen with 'PSP Found!' in big letters. If it's not, manually specify which drive it's using, and make sure you've created both the MP\_ROOT and 100MNV01 directories on your Memory Stick. Go back to your PSP, disable the USB connection by pressing X and turn it off (there's no point wasting batteries while your video is converting).



**2** In PSP Video 9, click Convert → New Job. Open your source video file (in our case, we're using a Grand Theft Auto: San Andreas stunt video we found on a gaming Web site), give it the name you'd like to appear on the PSP, and finally pick a profile that suits your source video. We've chosen one of the '320x240/15fps' options, as our video is 4:3 aspect ratio and already runs at 15fps. (In many versions of Windows, you can right-click a video file and select Summary for technical information.) Click the New button and the conversion process will begin. This can take some time, depending on the length of your video, the profile you've selected and the speed of your PC.

**3** Once the conversion is finished, turn your PSP back on and re-enable the USB connection. In PSP Video 9, click Copy, select your video from the list on the left and click 'Copy video to PSP'. Once the file has finished copying, left-click the 'Unplug or Eject Hardware' or 'Safely Remove Hardware' icon in your system tray and choose the drive letter that corresponds to your PSP. Back on the PSP, disable the USB connection again by pressing the X button. To begin playing your movie, navigate to Video → Memory Stick and press Circle. Now you can just sit back and enjoy the show!

## Video playback

The controls for video playback on the PSP are quite simple. Select Video → Memory Stick for a list of videos, and press Circle to start playback. While playing, using the left and right D-pad buttons fast-forwards and rewinds; press Triangle for an onscreen control menu, which will let you do things like resize the screen, use slow motion and so on. Pressing X stops playback.

## Music on the PSP

The PSP supports the playback of two digital audio formats natively: MP3 and AAC3plus. It does not support WMA or OGG, so if you've encoded your files in either one of these formats, you'll need to re-encode them (see below for full instructions of how to do this). If you've got plain MP3s, it's a

simple matter to get them working on your PSP. Simply plug in your PSP via the USB cable, turn it on and select Settings → USB Connection. Back in Windows, use My Computer or Windows Explorer to browse to the PSP\MUSIC folder on your Memory Stick (if you used the PSP's built-in Format function, your Memory Stick should already have this) and copy your MP3 files into this folder. The PSP can also read subfolders, so you can safely copy over whole albums in their own folders.

As with video playback, the basic music controls are quite simple, but there are quite a few advanced ones as well. Use the D-pad to navigate your files and press Circle to play and X to stop. While playing, Triangle brings up a list of onscreen controls that you can access

using the D-pad, and you use Circle to select an item. The shoulder buttons (L and R) skip forward or back between tracks, and the left and right D-pad buttons fast-forward or rewind the currently playing track. Pressing Select will take you back to the PSP browsing interface, but will continue to play your track. Hitting the musical note button lets you select between five equalizer presets: Heavy, Pops, Jazz, Unique or Off.

If your music files are not in MP3 format, here's how to re-encode them so they're PSP-friendly. Install and run CDex 1.51 from the cover discs, and select Options → Settings. Under Encoder, make sure 'Lame MP3 Encoder' is selected (it should be the default) and change any settings you desire (you may wish to make the

minimum bit rate higher than 128Kbps, for example), then Click OK. Next, click Convert → 'Re-encode Compressed Audio File(s)', and select the files you want to convert. Click the Convert button and CDex will go about changing your music files — you'll find the new re-encoded MP3s in the CDex output directory (by default, C:\My Music).

## Photos on the PSP

Getting images on your PSP is very easy: simply connect it to your PC as described above and copy any images to the PSP\PHOTO directory on your Memory Stick. Then, on your PSP, browse to Photo → Memory Stick for a list of images. You can skip forward and backwards using the shoulder buttons, or press Triangle for more options. 📖

# King-sized adventure

**Julian Schoffel**  
**previews the hottest**  
**upcoming games,**  
**starting with an**  
**adventure game of**  
**gigantic proportions.**



Platform: PC, all major consoles Contact: Ubisoft  
 Phone: (02) 8587 1800 Web: www.ubi.com/uk/ Release date: Late 2005

woman up into the air over a giant sacrificial altar. After a dramatic build-up, King Kong appears, grabs the woman and moves off into the jungle.

The game then shifts focus to Jack Driscoll and Co. as they attempt to flee from the aforementioned natives. The group eventually manages to escape into the surrounding ruins only to be confronted by a small, raptor-like dinosaur. Seemingly out of nowhere, a gigantic centipede appears and attacks the dinosaur.

In the next sequence, Driscoll's party has ventured further into the jungle. An enormous Tyrannosaurus Rex emerges from the jungle and devours one of the men, unperturbed by Driscoll's attempts to shoot it. When Driscoll runs out of bullets, he proceeds to hurl spears at the creature. Whenever the T-Rex scores a hit or roars at him, an extremely cool-looking blur

You will often need to use improvised weapons.



effect distorts the entire game screen, almost as if Driscoll's senses are being overpowered.

Chased by T-Rexes and Pterodactyl-like creatures, the group attempts to escape by paddling some rickety bamboo rafts down a series of rapids and waterfalls. At this point King Kong suddenly reappears out of the jungle, still holding the woman. When he sees the T-Rex he goes into a rage, puts the girl down, and then charges towards the dinosaur. In the final sequence, Kong proceeds to attack the T-Rex and a titanic battle ensues...

When you're controlling Jack Driscoll the other characters speak directly to you, making you feel as if you're caught up in a grand adventure of epic proportions.

Unlike most games, *King Kong* doesn't have a HUD or user interface of any kind, leaving the game screen completely uncluttered of any distracting features. The idea

behind this is to immerse you in what's happening onscreen and if what we saw is any indication, the system seems to work pretty damned well.

When you're controlling Kong, the viewpoint switches from first to third person. Kong emanates raw power and speed, and is capable of kicking, biting, punching, grappling and even ripping up objects and using them as makeshift weapons. Kong is also extremely agile and can jump and swing around the jungle landscape with relative ease. When the need arises, he can use his brute power to push objects out of the way. The lack of an onscreen interface means you rely on visual cues to tell you when Kong is taking damage. This is quite intuitive and if Kong tires or gets wounded, he simply has to find a safe place to recuperate.

If the demo was any indication, the game looks to be one extremely wild ride!

## King Kong

Ubisoft's *King Kong* game is approaching completion. Its release will tie in with Peter Jackson's cinematic remake of *King Kong*, which is due out later in the year.

We recently visited Ubisoft's Sydney office where they gave us a real-time demonstration of the Xbox version of this stunning action/adventure offering, and from what we saw Ubisoft and Peter Jackson have gone to great lengths to ensure that the videogame incarnation does full justice to the film.

At the start of the game, some Skull Island natives hoist a

## Prince of Persia 3



Platform: PC, all major consoles Contact: Ubisoft  
 Phone: (02) 8587 1800 Web: www.princeofpersiagame.com/uk/ Release date: Late 2005

Ubisoft also gave us real-time demonstrations of some of their other key titles due out later this year. The first of these was *Prince of Persia 3* (POP3).

The Prince, now a seasoned warrior, returns from the Island of Time to Babylon with his love interest, Kaileena. Upon his return he finds his homeland ravaged by war and the kingdom turned against him. When the Prince is captured, Kaileena unleashes the Sands of Time to save him and sacrifices herself in the process. Cast out

on the street and hunted as a fugitive, the Prince is gradually overcome by an evil alter ego.

Not long into the demo, it became clear that POP3 is a much darker game than its predecessors. This stems from the fact that the Prince now has two split personalities, each with its own distinct combat styles and abilities. In an interesting twist the Prince uses fire and water to change between these two forms.

Despite the darker tone, the game looks absolutely gorgeous

The game is definitely geared towards an older audience.



with butter-smooth animation and a new context-sensitive movement system. This makes it easier to exploit each character's moves and abilities.

In the demo, the 'dark' Prince cut a sway through

numerous enemies, dropping down on them from above and strangling them with a chain. The game is pretty gory and one of the bosses we saw was actually quite hideous, resembling a kind of grossly



deformed ogre-like creature. Unlike previous games in the series, POP3 definitely seems geared towards an older, more mature audience.

Other standout moments included a frenetic *Ben-Hur*-style chariot race through the streets of Babylon and lightning-fast combat

sequences, which transitioned seamlessly from the city streets up to the rooftops.

If the demo we saw was anything to go by, then *Prince of*

*Persia 3* looks extremely promising.

Stay tuned for more detailed coverage, including a full review, in the coming months.

## Blazing Angels: Squadrons of WWII

Another game we saw during our visit to Ubisoft was *Blazing Angels: Squadrons of WWII* (BA). This action-oriented flight combat game lets you test your skills in some of the most famous battles of World War II. As a squadron leader, you'll be able to fly up to 40 WWII aircraft in both single-player and multiplayer missions.

In the demo, we saw a massive air battle raging over Pearl Harbour. There were loads of planes in the air and plenty of ground features like buildings, warehouses, piers, vehicles and massive warships. A lot of effort has obviously been put into modelling ground troops and

when the plane swooped low, you could see individual soldiers milling around in a fairly realistic manner.

The visuals were quite impressive, but by no means jaw-dropping. Standout features included realistic smoke haze (which when flown through drastically affects your field of vision) and reflective water.

BA is built around squadron-based combat and you will be able to fly alongside computer-controlled wingmen powered by advanced artificial intelligence. The game will feature a 20-mission single-player campaign, which will be very much in the vein of *Crimson Skies*, according

The game features realistic smoke haze and reflective water.



to the folks at Ubisoft. BA also includes support for Xbox Live and up to 16 players will be able to engage in head-to-head dogfights or cooperative teamplay between squadrons.

The game's single-player campaign certainly looked quite promising, but we have a feeling

**Platform:** Xbox  
**Contact:** Ubisoft  
**Phone:** (02) 8587 1800  
**Web:** [www.blazing-angels.com/uk/](http://www.blazing-angels.com/uk/)  
**Release date:** Late 2005

this one will really shine on Xbox Live. *Blazing Angels* is scheduled to ship later this year.

## Far Cry: Instincts

Apart from *King Kong*, *Far Cry: Instincts* was the most impressive game we saw demonstrated at Ubisoft's Sydney office. In an interesting twist, Ubisoft recently announced that *Instincts* would now be exclusive to Xbox. We can only assume that this means the title was just too visually demanding for the aging PS2.

The storyline of the game closely mirrors the PC version: you control Jack Carver, a bad-ass dude with a mysterious past. Carver is trying to make a fresh start with a charter boat business in the South Pacific. As the game begins he has been hired by an American photojournalist, Valerie Constantine, to take her to an uncharted island in Micronesia. After delivering Valerie to the island, his boat is sunk by mercenaries, leaving him stranded thousands of kilometres from home in a hostile environment.

Soon after arriving on the island Carver receives

**Platform:** Xbox  
**Contact:** Ubisoft  
**Phone:** (02) 8587 1800  
**Web:** [www.farcrygame.com](http://www.farcrygame.com)  
**Release date:** September 2005

assistance from a mysterious individual named Harlan Doyle. Carver also stumbles across a secret island compound controlled by a sinister character known as Krieger. Krieger was formerly a World Health Organisation scientist, but disappeared amid the storm of controversy surrounding his genetic research program. Carver's main objectives are to rescue Valerie, find out what Krieger is up to and escape from the island.

From what we saw, *Instincts* looks almost as good as the PC version, which is a pretty impressive feat. The combat system has been significantly beefed up and Carver is now able to better exploit terrain, move more stealthily, snipe from greater distances, and even use traps.

But the most interesting

The combat system has been significantly beefed up.



aspect of the game is Carver's new Feral abilities. Without spoiling the storyline, at some point in the game Carver gets injected with a cocktail of gene-altering drugs. As a consequence, he begins to mutate and evolve, gaining advanced tracking abilities, superhuman speed and lethal melee attacks. While this certainly adds spice to the single-player component, the implications for multiplayer are enormous!

This brings us to the game's much talked about Predator multiplayer mode, where a squad of mercenary players are pitted against a lone predator

player with full-powered Feral abilities. The mercenaries have to try to secure a transmitter tower that triggers a kill switch and destroys the predator. The predator has to try and pick them off one by one.

*Instincts* will include full support for Xbox Live and you will even be provided with a built-in level editor to create your own custom maps. The game will also support up to 16 players in all the traditional multiplayer game variants, along with the Predator mode.

*Far Cry: Instincts* is scheduled to hit the shelves in September. Stay tuned for a full review shortly. ☺

# New Greek classic

**Julian Schoffel reviews the hottest new games for PC and consoles.**

## God of War

**A**nchored in Greek mythology *God of War's* storyline centres on an ex-Spartan warrior known as Kratos. At the start of the game Kratos is in a despairing, suicidal state of mind. Just as he plunges over a cliff to his (apparent) death, the game rewinds back through time to explain how Kratos got into this sorry state in the first place. Virtually all of Kratos's foes come straight out of Greek legends. These include the Hydra, Medusa, Gorgons, Minotaur, Cyclops and the gods themselves. Indeed Kratos's main quest in the game is to

**10** Platform: PS2 Price: \$99.95 Contact: Sony Computer Entertainment Phone: 1300 365 911 Web: [www.godofwargame.com](http://www.godofwargame.com) Classification: MA (15+) + Seamless blend of action, adventure and puzzle solving + Gorgeous visuals + Compelling storyline



The game is anchored in Greek mythology.



find and kill the god of war, Ares. Basic gameplay consists of moving Kratos through a series of lavish 3D environments, engaging all manner of foes in combat and frequently solving puzzles. Kratos is a prodigiously skilled warrior and his main tools of the trade are a formidable set of chain-blades, which function like dual whips with wicked swords tied to the ends. The gods provide Kratos with plenty of other lethal weapons and abilities as the game progresses. At times, the game feels decidedly railed, but the action is so fluid and the visuals so grandiose that most

players probably won't care. The game also manages to weave plenty of fiendish puzzles in among the action set pieces. These usually consist of pulling a sequence of levers/switches or moving objects around the gameworld. Solving a puzzle will usually result in Kratos gaining access to a new area. Successfully completing the game unlocks a variety of extras, including 'making of' videos

and an additional difficulty level (God mode). *God of War* is without question one of the finest PS2 games we have ever played! The game's seamless blend of action, epic adventure and puzzle solving is a delight in itself, but it also offers gorgeous visuals, a compelling storyline and loads of unlockable extras. In short, it is the complete gaming package.

## Destroy All Humans

*Destroy All Humans* (DAH) is a tongue-in-cheek tribute to B-grade sci-fi movies of the 1950s. As the title suggests, the game's twist is simple: rather than controlling a human character, you go in to bat for the aliens. To this end much of the game revolves around exterminating hapless Homo sapiens, extracting their DNA and inserting the odd anal probe... You control Crypto, an alien warrior sent to Earth to clear the way for the Furon invasion force. Your mission is to infiltrate humanity, control them, harvest their brain stems and ultimately destroy them. At

its heart, DAH is a simplistic 3D shooter with two basic mission types: ground-based missions where you wander around the countryside terrorising the populace, and ship-based missions where you pilot a flying saucer kitted out with a lethal array of weaponry. While the missions themselves aren't especially compelling, this is more than compensated for by the game's abundant humour. Chock-full of references to repressed 1950s America and cheesy sci-fi flicks, DAH is sometimes downright hilarious. The game's 3D visuals are quite slick for a PS2 game. You will

**7** Platform: PS2 Price: \$99.95 Contact: THQ Phone: (03) 9573 9200 Web: [www.destroyallhumansgame.com](http://www.destroyallhumansgame.com) Classification: M (15+) + Tongue-in-cheek humour + Accessible and fun - Repetitive, relatively shallow gameplay

find plenty of crisp, colourful 3D terrain to explore ranging from serene (well, it was until Crypto arrived) countryside to sprawling urban environments. The game's audio fares similarly well, although in our opinion the actor playing Crypto doesn't quite nail it. If you've had your fill of grim sci-fi offerings like



Your mission is simple: destroy humanity.

Spielberg's *War of the Worlds* and you're in dire need of some light relief, then *Destroy All Humans* could be just what you're looking for.

## Madagascar

The Nintendo DS version of *Madagascar* loosely follows the storyline of the recent animated flick. As the game begins Marty

the zebra is celebrating his 10th birthday. Sick of life in Central Park Zoo, he decides to escape, along with his friends Alex the

lion, Melman the giraffe, Gloria the hippo and a pack of wily penguins. *Madagascar* consists of fairly traditional side-

scrolling/platform fare with a few gameplay twists thrown in for good measure. During the course of the game, you control

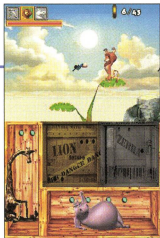
Marty, Alex, Melman and Gloria, although you'll occasionally take control of the penguins as well. Each character has their own inherent strengths and weaknesses, necessitating frequent character swapping to overcome certain obstacles. *Madagascar* relies on a conventional D-pad/button control scheme to move the characters around, but you'll occasionally encounter a level that makes use of the lower

touchscreen. For the most part though, it is only used for menu selections. The game's visuals are bright and colourful, but not especially memorable. The game's audio is passable, although the music started to get on our nerves after a while. While *Madagascar* is quite a fun little platform offering, it doesn't adequately exploit the Nintendo DS's lower touchscreen and, as a consequence, feels too much like a Game Boy Advance game.

Quite a fun little platform game.

6

Platform: Nintendo DS  
Price: \$79.95 Contact:  
Activision Phone: (02)  
9869 0955 Web: www.  
madagascarthe game.com  
Classification: G (8+) + Decent side-  
scrolling/platform fare + Colourful  
cast of characters - Fails to exploit  
lower touchscreen



## ER

At first glance, the *ER* game appears to have a lot of potential: it features the voice acting skills of three of the TV show's most prominent actors (Noah Wyle, Mekhi Phifer and Sherry Stringfield), its engine bears a passing resemblance to that of *The Sims 2* and, because it's based on the TV show, it has a wealth of dramatic material to draw from. Regrettably, the game fails to adequately exploit any of these elements and the whole exercise rapidly deteriorates into an insipid click-fest. In the game, you create your own intern before embarking on a medical career at Chicago's County General hospital. Basic gameplay consists of moving your character around the hospital, interacting with other staff

members, diagnosing patients and, if your character's skill level is high enough, treating them. Unfortunately, most of these tasks are accomplished by repeatedly clicking the left mouse button. *ER*'s much-touted episodic gameplay also doesn't amount to much. The game's storylines appear to be there merely as an excuse for wackily dressed patients, rather than to generate any sort of dramatic tension. You will treat countless weirdos during the course of the game, such as clowns and comic book characters, many of whom miraculously stay in character despite their medical condition. *ER* includes some very Sim-like elements, such as your character's hygiene, composure and energy needs. These three

5

Platform: PC Price:  
\$49.95 Contact:  
Mindscape Phone: (02)  
9964 0475 Web: www.ergame.  
com Classification: M (15+)  
+ Solid voice acting - Half-  
baked gameplay - Zero drama

Where's the drama?



needs are represented as bars on the character screen and you can't afford to let them drop too low. But we found it pretty hard to believe that a budding intern can skedaddle off to the hospital gym whenever the stress level gets too high. Do hospitals even have gyms? The game also contains a system for socialising with other characters, but most of the time this just involves

mirroring a non-player character's behaviour back at them. Sadly, the game comes across as a half-baked *The Sims* clone. *ER* the TV show consistently delivers intense and involving human drama. *ER* the game is about as exciting as a chartered accountant's convention. Unless you're a hardcore fan of the series, we'd give this one a miss.

## Retro Atari Classics

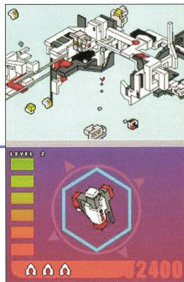
*Retro Atari Classics* (RAC) is a compilation of ancient Atari arcade videogames (we're talking early 1970s here for the likes of *Pong*) that have been reworked to suit the Nintendo DS portable games console. The games on offer include *Centipede*, *Pong*, *Tempest*, *Missile Command*, *Warlords*, *Breakout*, *Sprint*, *Gravitar*, *Asteroids* and *Lunar Lander*. The names alone almost bring a tear to the eye of old farts like yours truly, and I can remember spending many an hour in the game arcades, wasting a zillion 20c pieces on these suckers. The games' control schemes have been rejigged to make use of the

Nintendo DS's lower touchscreen. In some instances, this works fairly well, but in most cases it totally changes the feel of the game and not in a good way. Aside from the new touchscreen controls, the games also feature two modes of play: Classic and Remix. As you'd expect, Classic mode closely emulates the visual style of the original games, while Remix mode provides artistic reinterpretations by some prominent graffiti artists. These changes are purely aesthetic and the core gameplay remains identical. While it's kind of cool being able to play these videogame classics on a DS, in

5

Platform: Nintendo DS Price:  
\$69.95 Contact: Atari  
Australia Phone: 1800 060  
605 Web: www.atari.com.au/games/  
overview.do?id=305 Classification: G  
(8+) + Classic retro games lineup  
- Touchscreen controls don't feel right  
- Remix modes look hideous

Atari would have been better served letting sleeping dogs lie.



all honesty the new control schemes and graphics just don't work all that well. In our opinion, Atari would have been better served letting sleeping dogs lie. ☹

# Data projectors

**Whether for business or after hours use, data projectors will bring your display to life. But be careful when choosing, writes Darren Yates.**

**D**ata projectors have a long history as a business tool, but it's their ability to please when watching movies at home that has seen a real increase in their popularity — that, and their rapidly shrinking price tags. Some models in this roundup sell for less than \$1,400, which is a fraction of the cost of many big-screen TVs.

Unfortunately, the drop in price comes with a corresponding drop in quality in some models, so while the prices looked great, a good number of the models we tested didn't. Yes, there are still some great-value projectors out there, but you have to know what to look for and, most importantly, what to avoid.

## What we found

Texas Instruments's digital light processing (DLP) technology is rapidly overtaking traditional liquid crystal display (LCD) as the prime technology behind most of today's projectors. Both technologies have their qualities

and drawbacks.

LCD projectors generally have less contrast (blacks are more grey than black) and often have a 'flyscreen' effect, where the LCD's dot matrix structure has sufficient gaps between each pixel that on some models it's as though you're viewing through a flyscreen.

On the other hand, cheaper DLP projectors have a subtler drawback that's known as the 'rainbow' effect or colour flashing. DLP projectors use thousands of tiny mirrors to 'switch on' each pixel of light. To get full colour, the light passes through a colour wheel (a small rapidly rotating wheel with red, green, and blue filters), and if that wheel doesn't spin fast enough, you can observe colour flashes or a rainbow effect as you view.

The colour wheel has equal-sized segments of the three primary TV colours: red, green and blue (RGB). There are one or two five-segment wheels — red, green, blue, white, yellow (RGBWY) and some six-segment

RGB wheels as well. However, while the segments affect the colour, the spinning speed is the key to avoiding colour flashing. It's most noticeable on 2x wheels, less noticeable on 3x wheels and almost impossible to spot on the more expensive 4x wheels.

## Caveats

One of the big things to look out for when purchasing a projector is replacement lamp costs. Most lamps will only last 3,000 hours even at a stretch, so you need to factor in the cost of replacement lamps. While projector prices have tumbled, replacement lamps have not been so obliging. Few lamps have a recommended retail price of under \$500, but you may find one or two on special, so look around before you buy.

Given that most vendors only offer a 90-day warranty on the lamp, it's something else you need to consider. All that said, you'd have to rack up plenty of hours for replacement costs to add up to a \$5,000 plasma TV. Regardless of price, image quality should be your primary objective, because there's no point having a cheap lamp replacement if the image is lousy to begin with.

## TOP TIP

### Beware the lamp

While most vendors will happily tell you their projector lamps will last 2,000 hours in standard mode and 3,000 hours in eco mode, there's no guarantee you'll get anywhere near that. In fact, most vendors only provide a 90-day or 500-hour warranty on the lamp, whichever of those comes first. The only exception is HP's vp6315 with its 8,000-hour lamp life backed up by a two-year guarantee.

The advent of so-called home theatre projectors is making widescreen projectors more popular at home, but you do need to be careful because most offer less than SVGA resolution, less brightness than standard SVGA models and cost more to boot. They're unable to handle computer screen (VGA) inputs without some compromise, either.

Obviously, we can't cover every model on the market, but use our reviews as a guide when shopping. Armed with the right knowledge, you'll be viewing presentations or enjoying your movies on the big screen, without spending big.

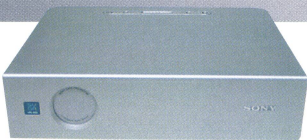
## BUDGET SVGA PROJECTORS

### Sony VP-ES2

The LCD technology in Sony's VPL-ES2 resulted in one of the better-quality units you'll see at this price. Sony has also added in some nice little extras, such as motorised tilt control and a lens cover. You also get automatic vertical keystone correction, and you can switch it to manual mode, which is great. While most LCD projectors have that typical flyscreen effect, the VP-ES2 wasn't too bad in that respect and quite watchable. It handles

**Price:** \$1,769 **Contact:**  
**Sony Phone:** 1300 137 669  
**Web:** [www.sony.com.au](http://www.sony.com.au)  
 + Auto tilt function + Auto vertical  
 keystone correction + Flyscreen  
 effect passable

downscaling of 1,024 by 768-pixel resolution Windows screens well, maintaining quite good clarity in our tests. We most admired its ability to handle DVD playback. The quality here — particularly in colour and, most importantly, contrast levels — was second to



none in this category. Its tonal characteristics were excellent, making it a great choice even just on S-Video, let alone HDTV on component video. The downside is that the fan is rated at 36dBa, one of the louder models we tested, although it

wasn't too bad in practice. The replacement lamp costs \$549, which is the average. While a significant number of projectors we tested had problems with contrast and tonal accuracy, the VP-ES2 did a marvellous job of making everything watchable.



## OTHER BUDGET SVGA PROJECTORS TESTED

## HP vp6315



**7.5** Price: \$1,899 Contact: HP  
Contact: 13 13 47 Web:  
www.hp.com.au + Well  
built + 8,000-hour lamp life  
— Rainbow effect

HP's vp6315 is one of the better-built projectors we've seen. It feels solid, helped by the built-in handle in the front-left corner. We didn't particularly enjoy its image quality, but its lamp life is impressive. HP claims the lamp will do 4,000 hours in standard 1,600 ANSI lumens mode and an amazing 8,000 hours in low-power eco mode. Unfortunately, this projector suffered from colour flashes. It did a capable job of Windows applications, although considerable contrast crushing of near-whites rules it out as a DVD projector in our opinion. But for business, this is one of the better models around.

## Epson EMP-S3



**7** Price: \$1,295 Contact:  
Epson Phone: (02) 8899  
3666 Web: www.epson  
.com.au + No-flicker LCD — Digital  
zoom only — Noticeable flyscreen

Epson's EMP-S3 replaces the older EMP-S1, but even though it's cheaper at \$1,295, its overall design has changed little. It matches the majority of models in this category with its 1,600 ANSI lumens brightness, but the digital zoom only gives you minimal room for image adjustment. The overall image quality was good with both S-

Video and HDTV inputs, although the flyscreen effect was clearly visible. Unfortunately, this was one of the bulkiest units we tested. However, Epson continues to provide very cheap replacement lamps, with the lamp for this model selling for under \$350. Clearly, some features are missing in order to get the price down, but we think Epson may have gone just a step too far by ditching optical zoom.

## NEC VT47G



**7** Price: \$1,399 Contact: NEC  
Phone: 13 16 32 Web:  
www.nec.com.au + Auto  
vertical keystone correction  
— Noticeable flyscreen — Expensive  
lamp replacement cost

Although it's one of the cheapest projectors ever, NEC's entry-level VT47G can't match the more expensive ones for visual quality or extras. Being an LCD design, the flyscreen effect was clearly noticeable. Image quality on the whole was passable, although it didn't

handle the downscaling of our 1,024 by 768-pixel Windows desktop very well. The unit also features digital rather than optical zoom. The VT47G features auto vertical keystone correction up to an excellent  $\pm 30^\circ$ . A low-noise 28dB fan makes it one of the quietest projectors out. Unfortunately, the \$750 cost on replacement lamps is steep. Overall though, it's a competent budget projector at a budget price.

## Acer PD113P



**6.5** Price: \$1,435 Contact:  
Acer Phone: 1800 366 567  
Web: www.acer.com.au  
+ Smooth image + Low-noise fan  
— Severe colour flashing

The image quality of this DLP was generally smoother than most of the LCD models, but not what you'd call sharp. It delivers the same 2,000-hour standard/3,000 eco mode lamp life as most other models and features a low-noise 28dB fan. However, the fact that it features

a 2x colour wheel is the major drawback. The colour flashing was enough to put us off using it to watch a movie. The colour accuracy and depth on our DVD test was quite reasonable. This is an OK projector that's unfortunately undone by the colour flashing issue.

## InFocus X2



**6** Price: \$1,699 Contact:  
InFocus Phone: 1800  
885 481 Web: www.  
infocus.com + Good Windows  
downscaling — Noisy fan  
— Noticeable colour flashing

The InFocus X2 exhibited most of what we don't like in a projector. Its budget DLP design gave us noticeable colour flashing during testing and it was one of the noisiest models we've heard at 39dB. It claims a contrast level of 2,000:1, but near-whites were crushing and blacks were a muddy grey. This model did well on our Windows desktop test, but overall, it was too big, too noisy and not exceptional value. ☹

## BUDGET SVGA PROJECTORS: HOW THEY COMPARE

Model	Acer PD113P	Epson EMP-S3	HP vp6315	InFocus X2	NEC VT47G	Sony VPLS2
<b>SPECIFICATIONS</b>						
Native resolution	800 by 600	800 by 600	800 by 600	800 by 600	800 by 600	800 by 600
Projection sensor	DLP	LCD	DLP	DLP	LCD	LCD
Brightness - standard/eco	1,600/1,200	1,600/1,400	1,600/N/A	1,600/1,100	1,500/1,200	1,500/1,300
Contrast ratio	2,000:1	500:1	2,000:1	2,000:1	400:1	350:1
Digital keystone correction	$\pm 15^\circ$	$\pm 30^\circ$	$\pm 20^\circ$	$\pm 10^\circ$	$\pm 30^\circ$	$\pm 15^\circ$
Aspect Ratios supported	4:3 (native), 16:9	4:3 (native), 16:9	4:3 (native), 16:9	4:3 (native), 16:9	4:3 (native), 16:9	4:3 (native), 16:9
Lamp type and power	200W NUP	125W UHE	210W UHP	200W SHP	130W DC	185W UHP
Lamp hours - standard/eco	2,000/3,000	2,000/3,000	4,000/8,000	4,000/N/A	2,000/3,000	3,000/4,000
Lamp type level - standard/eco	3048/2848	3648/2848	3648/3448	3948/3748	2848/2848	3648/3348
Dimensions (mm)/weight	265x202x90/2.0kg	327x246x98/2.5kg	280x255x102/3.3kg	249x327x106/3.1kg	294x260x93/2.9kg	295x238x78/2.8kg
Max. PC display resolution	1,280 by 1,024	1,280 by 1,024	1,400 by 1,050	1,024 by 768	1,600 by 1,200	1,024 by 768
<b>INPUTS</b>						
VGA/component/S-Video composite	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/No/Yes/Yes	Yes/No/Yes/Yes	Yes/Yes/Yes/Yes
DVI-D/DVI-A	No/No	No/No	No/No	Yes/No	No/No	No/No
Replacement lamp cost	\$680	\$349	N/A	\$618	\$725	\$549
<b>TEST RESULTS</b>						
DVD/HDTV/PC quality	6.5/6.5/7	7.5/7.5/7	6/6/8	5.5/5.5/8	7/7/6.5	8.5/7.5/8

## XGA PROJECTORS

### BenQ PB6210



**7** Price: \$2,199 Contact: BenQ Phone: (02) 9352 8800 Web: [www.benq.com.au](http://www.benq.com.au) + Clean Windows image - Expensive replacement lamps - Crushed contrast

BenQ's PB6210 was one of the best DLP projectors we saw this month. While its image quality was taken aback by some crushing in its contrast, its 3x colour wheel gave significantly less colour flashing than all of the 2x models, although it was still noticeable. It's a fairly standard model otherwise, with a typical 2,000/3,000-hour lamp life in normal/eco mode. Its 2,000 ANSI lumens brightness matches all of the models bar the X3 in this category, yet its low 30dB noise level is significantly better than the Epson, HP and InFocus models. Unfortunately, BenQ wants a hefty \$789 to replace its 200W lamp, so it's worth carefully thinking about. A good clean image on Windows makes this one of the better DLP models.

### Epson EMP-732



**7** Price: \$2,649 Contact: Epson Phone: (02) 8899 3666 Web: [www.epson.com.au](http://www.epson.com.au) + Auto vertical keystone correction - A bit noisy - Flyscreen effect noticeable

Despite being the only LCD model in this category, the EMP-732 offered the best value of the five units tested. The EMP-732 still suffered from some flaws though. It has a noticeable flyscreen issues, but we found that more bearable in business applications than the rainbow

effect of 2x DLP projectors. Its contrast range wasn't a strong point in our testing either, backed up by its low 400:1 specification. Coupled with its fairly high fan noise level of 39dBa, the EMP-732 wouldn't be our choice for DVD movies. However, it does have some good features, including a wide +/-30° vertical keystone correction range and a good, stable PC image through its VGA port. At just 1.7kg, it's also one of the lightest models you'll find. Overall, the EMP-732 is arguably one of the better XGA projectors out, but at this price, its value is still a little shaky.

### Acer PD125



**6** Price: TBA Contact: Acer Phone: 1800 366 567 Web: [www.acer.com.au](http://www.acer.com.au) + Lightweight design - Poor contrast/video handling - Significant rainbow effect issues

The PD125 is a new XGA DLP model, but colour flashing was particularly bad on this model. While we could not confirm it, the strength of the flashing suggests it uses a 2x wheel. On Windows, it does a very good job with strong colouring. This was another unit to claim a high contrast ratio of 2,000:1, but in practice, it crushed the white levels, making it a poor choice for DVD movies. It's a fairly compact design weighing a reasonable 2.5kg. Its 2W RMS onboard audio amp was only bettered by the X3's 2.5W RMS option. However, the colour flashing on this model was enough for us to look elsewhere.

### HP mp3222

The mp3222 was one of the more compact projectors we tested. It displayed a clean image on Windows applications,



**6** Price: \$2,599 Contact: HP Phone: 13 13 47 Web: [www.hp.com.au](http://www.hp.com.au) + Compact design - Poor video colour depth - Poor contrast

but it has a noticeable weakness with video. Whether it's HDTV from a PC or S-Video from a DVD player, it showed considerable crushing in terms of contrast, particularly near-whites, and its colour depth was poor. *Pearl Harbor's* explosion effects appeared as though they consisted of just three colours: red, yellow and white. We also found the unit's aspect ratio was wrong for PC video input, and we couldn't get 16:9 aspect ratio video right regardless of how we set the projector. Thankfully, this unit features industry-standard input connectors. On typical PC Windows applications, the mp3222 does well, but the lack of colour depth in our test unit left us cold.

### InFocus X3



**6** Price: \$1,999 Contact: InFocus Phone: 1800 885 481 Web: [www.infocus.com](http://www.infocus.com) + Wireless data transfer option - Noisy - 2x colour wheel

The X3 comes in the same basic chassis as the X2, but adds XGA resolution into its feature list. However, it's another of the single-chip DLP models with a 2x colour wheel, and the rainbow effect was noticeable. It's also another unit we wouldn't consider for home theatre work, given the high 39dBa noise level of the internal

fan. For business use, you get great features such as a wireless connectivity option. On the down side, it has the smallest keystone correction angle of the units we tested at only +/-10°, and is one of the few projectors we tested over 3kg. Its image quality on Windows applications was remarkably good, showing good colour and sharpness. Despite having a 2,000:1 contrast ratio, the X3 didn't handle near-blacks or whites as well as we would have expected. All up, good Windows image quality might get this one over the line for business use, but check that rainbow effect before you buy.

### HOW WE TESTED

Each projector was subjected to three sets of tests involving three different data inputs.

We started with Sony's VGN538GP notebook PC providing its 1,024 by 768-pixel VGA output to each projector's computer input. This helped us check its sharpness on characters and general Windows applications. We then got Windows Media Player to play a 1,440 by 810-pixel HDTV copy of a big-name Hollywood movie captured using a Dvico FusionHDTV tuner card to test each unit's handling of HDTV-resolution video and its accuracy in downscaling. After that, we used Sony's DVPF25 DVD player to run the movie *Pearl Harbor* through each projector's S-Video input.

In each case, the projector was set to 50% contrast and 50% brightness initially to determine base quality, and then adjusted to give the best picture quality. We checked for pixelation of the video as well as scanning and aspect ratio errors. We also checked for flyscreening with LCD projectors and colour flashing/rainbow effect on DLP models.

We did not test composite video quality as the composite video standard itself is too much of a compromise to give any real indication.

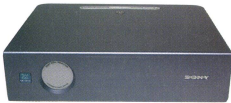
## HOME THEATRE PROJECTORS

## Sony VPLDS100

Sony's new VPLDS100 is an exclusively 16:9 widescreen projector with stunning image quality, particularly the colour accuracy and depth. The price isn't bad either. It may only be an SVGA model, but combined with some useful and clever features, it was just about as good as we saw. Interestingly, it can only accept a maximum PC resolution of 1,024 by 768 pixels,

but it downscapes that resolution to 800 by 600 very well. There was some noticeable flyscreening, but not as much as we saw in some of the budget LCD models. We were so drawn in by the terrific colour depth that we soon lost notice of it anyway. Other features include a built-in self-retracting lens cover, an auto motorised front tilt leg that rises when the

**8.5** Price: \$1,450  
Contact: Sony  
Phone: 1300 137  
669 Web: www.sony.com.au  
+ Excellent video  
processing + Motorised tilt  
+ Some flyscreening



projector powers up and automatic vertical keystone correction, making this unit all the more impressive. Fan noise levels in full lamp brightness mode aren't great at 36dBa, but

that said, we didn't overly notice it during testing. As an all-rounder with more emphasis on after hours entertainment, the VPL-DS100 gets a definite nod from us.

## InFocus ScreenPlay 480S



**8** Price: \$2,199 Contact:  
InFocus Phone: 1800 885  
481 Web: www.infocus.com  
+ 4x colour wheel + Good video  
processing - Low light output

We'd go so far as to say that the ScreenPlay 480S is about as good as you'll see in a home

theatre DLP projector at this price. The key is its 4x colour wheel — at this speed, colour flashing is all but impossible to detect. However, it's unfortunate that this and other home theatre projectors offer less resolution

than the 'business' models. The 480S has a native resolution of 854 by 480 pixels, so the resolution is better suited to US HDTV rather than Australian HDTV standards. Australian TV's 576-line signals need reprocessing to fit, whereas in the US, their basic HDTV standard is 480 horizontal TV lines. The 480S has just 750 ANSI lumens to light up your screen. It's more compact than

the X2 and X3 models, yet manages to include a DVI-D connector. With that 4x colour wheel, you've got more than a fighting chance of getting a decent image to start with, and we'd certainly pick this unit over any 2x colour wheel model. The bottom line is this is the cheapest 4x DLP projector we've seen — for a home theatre projector, this one's definitely one of our preferred choices.

## Toshiba TDP-MT200

Another of the 4x colour wheel brigade, the MT200 also has the same 854 by 480-pixel resolution and the same high contrast ratio, even exceeding the ScreenPlay 480S at an impressive 2,500:1. Those paper specs show up in real life with the unit exhibiting excellent contrast and a good, clear image. It has all the usual video inputs and includes DVI-D as well. The fan noise is rated at 32dBa, which makes it one of the noisier models we tested, but still passable in our book. The vertical keystone correction is manual only, but you have optical zoom and focus at your fingertips. Given that Toshiba is aiming this one at the home theatre market, they wisely haven't wasted time installing a useless low-power amplifier. If you're going to watch DVD movies or HDTV, you'd be mad not to have a decent surround sound speaker system anyway. The DLP mechanism, while

capable of handling VGA inputs up to 1,280 by 1,024 pixels, doesn't do it spectacularly well. Toshiba claims the usual 3,000-hour lamp life, which should be good for 1,500 movies. All up, there's really a struck match between this and the ScreenPlay 480S, so it comes down to price. Despite the fact that the MT200 is the most expensive projector we tested, it's also close to the best. **2.5**

**8** Price: \$2,999 Contact:  
Toshiba Phone: 13 30 70  
Web: www.isd.toshiba  
.com.au + 4x colour wheel  
+ Good contrast on video  
- Not great for PC use



## XGA PROJECTORS: HOW THEY COMPARE

Model	Acer PD125	BenQ PB6210	Epson EMP-732	HP mp3222	InFocus X3
<b>SPECIFICATIONS</b>					
Native resolution	1,024 by 768	1,024 by 768	1,024 by 768	1,024 by 768	1,024 by 768
Projection sensor	DLP	DLP	LCD	DLP	DLP
Brightness - standard/eco	2,000/N/A	2,000/N/A	2,000/1,500	2,000/N/A	1,600/1,100
Contrast ratio	2,000:1	2,000:1	400:1	2,000:1	2,000:1
Aspect ratios supported	4:3 (native), 16:9	4:3 (native), 16:9	4:3 (native), 16:9	4:3 (native), 16:9	4:3 (native), 16:9
Lamp type and power	200W NSH	200W NSH	170W UHE	200W P-VIP	200W SHP
Lamp hours - standard/eco	2,000/3,000	2,000/3,000	2,000/3,000	2,000/3,000	4,000/N/A
Fan noise level - standard/eco	30dB/N/A	30dB/26dB	39dB/36dB	37dB/35dB	39dB/37dB
Dimensions (mm)/weight	277x237x107/2.5kg	262x215x98/2.7kg	276x193x70/1.7kg	251x210x70/1.7kg	249x327x106/3.1kg
Max. PC display resolution	1,280 by 1,024	1,280 by 1,024	1,024 by 768	1,400 by 1,050	1,280 by 1,024
<b>INPUTS</b>					
VGA/component/5-Video/composite	Yes/Yes/Yes/Yes	Yes/Yes/Yes/Yes	Yes/No/Yes/Yes	Yes/Yes/Yes/Yes	Yes/No/Yes/Yes
DVI-D/TV-A	No/No	No/No	No/No	No/No	Yes/No
Replacement lamp cost	N/A	\$789	\$725	\$649	N/A
<b>TEST RESULTS</b>					
DVD/HDTV/PC quality	6.5/6.5/8	6.5/6.5/7.5	7/7/7.5	5.5/6/7.5	8/8/8.5

# OTHER HOME THEATRE PROJECTORS TESTED

## NEC HT410



**7** Price: \$1,799 Contact: NEC  
Phone: 13 16 32 Web:  
www.nec.com.au + Vertical  
lens shift – Rainbow effect issues  
– Not overly stable design

The HT410 is NEC's entry-level home theatre projector. Although it suffers from colour flashing, thanks to its 2x colour wheel, it has few other wrinkles. On paper, the HT410 has only a fairly low 1,200:1 contrast ratio (low for DLP), but in real-world testing, it looked remarkably good. One thing we did notice after having our test projector on for some time was that it produced a significant amount of ozone that stank up our Labs. We hope this is just an issue with our test unit because you couldn't sit and watch a movie with it. The long portrait form factor makes this unit a little unsteady on its feet. Ultimately though, the 2x colour wheel dampened this one's appeal.

give you its full 1,200 ANSI lumens (not huge in itself) and the noise cranks up to a hefty 38dBa. On the upside, you get manual vertical keystone correction as well as optical zoom and focus controls. The zoom factor here is a massive 54%. That short-throw lens also means you don't need a long distance between the projector and screen/wall to get a big image. All up, it's better than the 3x colour wheel DLP projectors.

## Acer PH110



**6** Price: \$1,499 Contact:  
Acer Phone: 1800 366 567  
Web: www.acer.com.au  
+ Low-noise fan – Poor contrast on  
video – Obvious rainbow effect  
issues

The PH110's 854 by 480-pixel resolution makes it more suited to home theatre applications, but we found our test unit didn't

produce the sharpest of images. And despite its DLP-typical 2,000:1 contrast ratio, the image quality was quite poor with both near-blacks and near-whites crushed, even with the projector settings at a midrange 50%. We couldn't find out the speed of the colour wheel in this unit, although practical observations suggest to us that it is probably another 2x unit. Noise levels of 30dBa full/28dBa economy power modes ensure this one won't deafen you, but the image quality won't likely excite you either. DLP projectors have real potential in the home theatre market, but if you don't like flickering images, you won't like the PH110.

## BenQ PE5120

The PE5120 looks to be built into the same basic chassis as the other BenQ models we looked at, but with a few added extras. Unfortunately, the 2x colour wheel makes another appearance in this 854 by 480-pixel DLP projector, but it also includes DVI-A and separate RCA component video inputs –

rare commodities at almost any price. It's also reasonably quiet with the fan noise only reaching 29dBa in full-power mode. The vertical keystone correction is manual and both the zoom and focus are optical rather than digital only. But for us, the colour flashing on this unit was just too much to make it an enjoyable experience. A good contrast ratio of 2,000:1 and some good results, even with just S-Video, may help win you over, but you must check the colour flashing for yourself before you cough up the cash for this model.

**6** Price: \$1,999 Contact:  
BenQ Phone: (02) 9352  
8800 Web: www.benq.com.au + DVI-A and RCA  
component video input  
+ Low-noise fan – 2x colour wheel



## Epson EMP-TW10H



**6.5** Price: \$1,649 Contact:  
Epson Phone: (02) 8899  
3666 Web: www.epson.com.au + Short-throw lens + High  
zoom factor – Fan noise and  
flyscreen issues

The EMP-TQ10H's combination of a short-throw lens with an 854 by 480-pixel LCD mechanism resulted in some significant flyscreening in our tests. Compare this with the ScreenPlay 4805 or Toshiba MT200 and you'll see it immediately. The fan noise is a reasonable 29dBa in low-power eco mode, but push the lamp to

## HOME THEATRE PROJECTORS: HOW THEY COMPARE

Model	Acer PH110	BenQ PE5120	Epson EMP-TW10H	InFocus ScreenPlay 4805	NEC HT410	Sony VPLD5100	Toshiba DTP-MT200
<b>SPECIFICATIONS</b>							
Native resolution	854 by 480	854 by 480	854 by 480	854 by 480	854 by 480	800 by 600	854 by 480
Projection sensor	DLP	DLP	LCD	DLP	DLP	LCD	DLP
Brightness – standard/eco	1,100/N/A	1,100/880	1,200/N/A	750/N/A	1,000/800	1,200/N/A	750/N/A
Brightness – eco mode	N/A	880	N/A	N/A	800	N/A	N/A
Contrast ratio	2,000:1	2,000:1	800:1	2200:1	1,200:1	400:1	2500:1
Digital keystone correction	+/-15°	+/-15°	+/-15°	+/-20°	+/-15°	+/-15°	+/-15°
- auto correction	No	No	No	No	No	Yes	No
Aspect Ratios supported	4:3, 16:9 (native)	4:3, 16:9 (native)	4:3, 16:9 (native)	4:3, 16:9 (native)	4:3, 16:9 (native)	4:3 (native), 16:9	4:3, 16:9 (native)
Lamp type and power	200W NSH	200W UHE	130W UHE	200W SHP	155W DC	157W	200W
Lamp hours – standard/eco	2,000/3,000	2,000/3,000	2,000/3,000	2,000/3,000	2,000/3,000	3,000/3,000	N/A/3,000
Fan noise – standard/eco	30dB/28dB	29dB/26dB	38dB/29dB	30dB/N/A	28dB/26dB	36dB/36dB	N/A/32dB
Dimensions (mm)/weight	265x198x92/ 2.3kg	262x216x99/ 2.9kg	402x294x114/ 3.6kg	249x327x106/ 3.5kg	187x337x113/ 3.0kg	295x238x78/ 2.8kg	298x275x101/ 2.9kg
Max. PC display resolution	1,280 by 1,024	1,280 by 1,024	1,024 by 768	1,024 by 768	1,400 by 1,050	1,024 by 768	1,280 by 1,024
<b>INPUTS</b>							
VGA/component video	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
S-Video/composite video	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes	Yes/Yes
DVI-D/DVI-A	No/No	No/Yes	No/No	Yes/No	No/No	No/No	No/Yes
Replacement lamp cost	N/A	\$789	\$369	\$618	\$499	\$699	N/A
<b>TEST RESULTS</b>							
DVD/HDTV/PC quality	5.5/5.5/5.5	7/6.5/6	7/6.5/6	8.5/8.5/6	8/7/6	8.5/8.5/7.5	8.5/8.5/6



# Free tools for your Web site

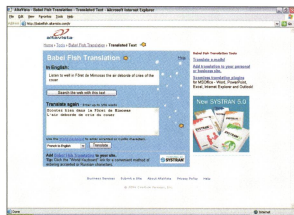
**Angus Kidman** discovers that adding extra resources to your business Web site can enhance its attractiveness to visitors — and you don't need to spend any money to do it.

One of the most commonly cited benefits of having a business Web presence is that you can potentially attract customers from anywhere in the world. An issue that many site creators fail to consider, however, is that the demands of visitors from overseas may be quite different. How will a US client react to prices quoted in Australian dollars? What happens if a potential buyer only speaks limited English? Despite the prevalence of English as a lingua franca online, the latter is becoming increasingly likely, with some estimates suggesting more than 60% of Net users now have a native language other than English.

While you can't solve all these problems on your own site, you can make use of existing resources available online to improve the visitor experience. Incorporating third-party tools such as

currency converters and language translators into your own pages demonstrates that you're serious about your online presence and are ready to treat all of your customers equally.

Both of the services we discuss below follow the same model: simply incorporate some HTML code to add the service to your pages. This doesn't require an extensive knowledge of Web design — indeed, unless you want to customise the appearance of the page, you can normally just paste it directly into the existing code for your site. There are normally some restrictions to customisation (such as including logos for the service provider), but these are rarely unreasonable. While these aren't the only providers in these fields, both are well-respected brands that will enhance rather than detract from your own site, and offer services that are of genuine use to visitors.



## Language translation

While AltaVista may have been overtaken by Google in the general search market, its translation facility remains a clear leader, with 36 different language-to-language conversions possible in its Babel Fish service (the name is derived from Douglas Adams's *The Hitchhiker's Guide to the Galaxy*). It should be noted that machine translation is still no substitute for a real live human translator, especially with longer blocks of text, but integrating polyglots directly into your site isn't going to be an option for a few years yet.

AltaVista actively encourages sites to use and incorporate its translation tools, and the code to do so can be freely downloaded. Two standard code options are offered: one allows the user to enter text or a URL and receive a translation; the other provides immediate conversion of the current page into a number of target languages. This latter option is probably more useful for business sites. From English, you can automatically convert pages into any of 12 target languages. Both options are incorporated as JavaScript rather than plain HTML, which

Online translation services aren't perfect, but can help non-native English speakers navigate your site.

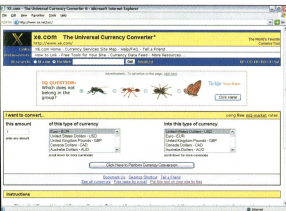
means they add minimal code weight to existing pages.

## Currency conversion

XE.com's Universal Currency Converter is one of the best-known online conversion tools, and boasts that it can handle virtually any currency in the world. XE offers a simple customisation service that allows you to incorporate the converter into your own pages, although it requires you to feature a banner ad in return. You can optionally pay US\$540 a year for the right to use the converter without the advertisement, but not many businesses are likely to need that option.

Sample code can be downloaded from the XE site, although you need to provide basic details of how you plan to use the service before adding it to your pages. You can also customise the appearance of the conversion service and even of the output pages if you wish; full details are provided on the site.

XE.com's full conversion service can easily be added to any existing site.



## RESOURCES

- ◆ **Currency conversion.** The signup form and customisation code for XE's Universal Currency Converter are available at [www.xe.com/ucc/](http://www.xe.com/ucc/) customize.htm.
- ◆ **Translation.** Code for a variety of translation boxes utilising AltaVista's Babel Fish can be found at [www.altavista.com/help/free/searchbox\\_transl](http://www.altavista.com/help/free/searchbox_transl).



ENTERTAINMENT ANYWHERE

# Video on demand

**Darren Yates shows you how to set up a video streaming network in your home — and it costs less than \$100.**

**W**ireless networking is beginning to take off as consumers and businesses alike see the benefits of being able to transfer files and access the Internet without wires. But if you ask me, that's a pretty ho-hum use of the technology.

Although people are beginning to use their wireless networks to stream or transmit their music collection, few seem to know it's possible to create your own video on demand (VOD) TV network. And you can do it for as little as \$100.

## What you need

Your home entertainment system might be as elaborate as they come: a media centre PC connected to a six-channel surround sound system and plasma TV, or it could just be a notebook computer that sits on your bed at night. Regardless of

how you watch videos, the key to creating your own VOD network is the wireless connection between your video storage 'server' and the device you use to watch them.

At the most basic level, all you need is two wireless network cards; one for each device. Using two cards, you create an ad hoc network, which allows the two systems to communicate directly with each other. If you want three or four people to have access at the same time, you can create an infrastructure network, where each PC or streaming device has its own wireless network card and all are connected together via a wireless access point.

Everything else you need to stream video you either already have, or can find free on this month's cover discs.

## What you can do

With a wireless network in place, it's not only possible to watch your favourite DVDs, but you can also stream your HDTV recordings from free-to-air TV, including everything from *Friday Night Football* to *Desperate Housewives*.

However, streaming video isn't a walk-up start for every PC, and to get it to work requires

some fancy footwork through a reasonably sized minefield. For starters, commercial DVD movies cannot be streamed over a wireless network because of their CSS copy protection and even without that, the bit rate of most DVD movies is too high to go over some networks. When it comes to HDTV, most of those issues are multiplied five times, because higher bit rates and higher resolutions make it hard for even the fastest PCs to cope.

Fortunately, there are ways around these and we'll show you the best techniques that will get you results, regardless of your setup and network speed.

## Wireless network basics

The type of wireless network you need comes under the umbrella term 'Wi-Fi'. There are two main types of wireless: 802.11b and 802.11g.

The 802.11b standard is the oldest and slowest, having a theoretical top speed of 11 megabits per second (Mbps), while the more recent 802.11g format cranks up the speed to 54Mbps. We say 'theoretical' because in reality, those figures are basically never attainable. In practice, you're doing well to get half those rates. You can also mix and match 802.11b and 802.11g equipment, but the speed will always be limited to that of the slowest device.

If you want help setting up a wireless network, check through our exclusive video tutorials on this month's cover discs and check out Nathan Taylor's story on maximising your wireless network speed (see page 82).

## Variables and limitations

There are any number of limitations, from network speed to video bit rates, to processing horsepower and encoding efficiencies, which all have to be

## TOP TIP

### Only two PCs?

If you only have two PCs to network wirelessly and a limited distance to transmit, forget a wireless access point (AP) and just use an ad hoc network structure. It's the cheapest way to create your wireless network, enabling the PCs to talk directly to each other. What's more, it can double the data throughput over infrastructure wireless networks that use an AP. The downside is it gives you less range, but when it comes to speed, every bit helps.

factored in before you invite everyone over for a 'choose your own video' night.

Whether you wish to stream DVD or HDTV, there are three basic parts to the process: rip, encode and stream.

## Streaming DVD video

The greatest limitation to streaming DVD video is CSS copy protection. It's common knowledge that there are plenty of tools on the Internet that allow you to bypass that protection and copy DVD movies to your PC, but doing so is illegal. And if you're caught selling copy-protected movies, chances are you'll be prosecuted. On the other hand, if you're streaming your own home DVD movies, that's not a problem.

What is a problem is that DVD video generally has a bit rate that's too high to transmit over a wireless network, not to mention the fact that DVDs have a multiple and complex file structure. The next step is to convert those multiple .vob files into a single, more efficient compression format or codec and, depending on the speed of your network and receiving computer/device, you have

## ON THE COVER DISCS

You'll find all the software you need to stream movies on this month's cover discs, including:

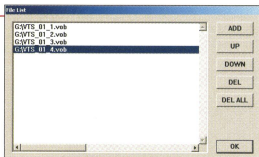
- ◆ DivX 5.0.2 codec
- ◆ XviD 1.0.3 codec
- ◆ VirtualDub-MPEG2 1.5.10 video converter
- ◆ VirtualDubMod 1.5.10 video converter
- ◆ ffdshow multiformat decoder
- ◆ ProjectX HDTV/DVD demultiplexer
- ◆ TMPGEnc 2.5.24 freeware MPEG-1 encoder
- ◆ DGMPGDEC 1.30 MPEG-2 decoder
- ◆ LAME 3.93 MP3 encoder
- ◆ tooLame 0.2k MP2 encoder
- ◆ TMPGEnc PC User DVD-MPEG-1 streaming template (exclusive)
- ◆ VirtualDub PC User DVD-DivX encoding streaming template (exclusive)

It is illegal for us to provide any DVD ripping tools.



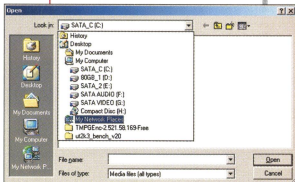
## STEP BY STEP CONVERT DVDS TO MPEG-1 FORMAT

**1** Rip your DVD to your PC's hard drive using whatever tool works for you and then open DGMPGDEC (DGIndex). Holding the Shift key, select all of the movie-only .vob files, choose to demultiplex the audio to WAV format and click File → Save Project → Demux Video.



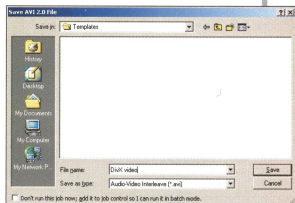
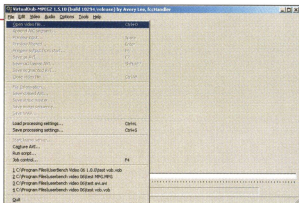
**3** Open up your viewing PC's copy of Windows Explorer, search the network for the server PC, find the new .mpg movie file and double-click it. Windows Media Player will start on your PC and begin playing the movie.

**2** Start up TMPGEnc, click the 'Video Browse' button to load in the .m2v video file into the Video box, and then the 'Audio Browse' button to load in the .wav file into the Audio box. Choose an output filename and location, click the Load button to add in our exclusive PC User MPEG-1 streaming template and then click Start.



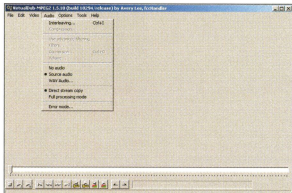
## CONVERT DVDS TO DIVX FORMAT

**1** Follow step 1 from 'Convert DVDs to MPEG-1 format' above, then start VirtualDub-MPEG-2 and load in the new .m2v file.



**3** Click File → Save As AVI, choose a filename and location, and then click Save. Follow step 3 from 'Convert DVDs to MPEG-1 format' above, but look for the new .avi file instead.

**2** Next, click 'Audio/WAV Audio'. Load in the .wav audio file created by DGMPGDEC and then load the exclusive PC User DVD-DivX streaming settings file by clicking File → Loading Processing Settings.





## ENTERTAINMENT ANYWHERE

three choices: the open source XviD, the now fully commercial DivX (both MPEG-4 codecs) and the now freeware MPEG-1.

In order of quality, you'd have to rank these as DivX, XviD and then MPEG-1, but there's an important reason not to discount MPEG-1 video compression. People give MPEG-1 a hard time for all the wrong reasons. Most people only know of MPEG-1 from VCD, a fairly limited and horrible video disc format. But that's the result of VCD's limitation, not MPEG-1's.

Last year in *PC User* (see the April 2004 issue, page 68), we showed you how you can dump three hours of VHS video onto a modified VCD called a KVCD. Minor tweaks to the KVCD format result in 100 minutes of DVD-quality widescreen video fitting on a 700MB CD-R disc. All using MPEG-1.

But the most important reason not to discount MPEG-1 is because it only requires the processing equivalent of the smell of an oily rag to decode. And since the receiving or viewing PC has to grab the data from the wireless network connection (as well as decode the video) and do it all without losing any frames, MPEG-1 is the ideal option for older (sub-1.5GHz) PCs.

XviD and DivX can give sharper results, but the significant downside to these codecs from a streaming point of view is that they need far more processing power to unravel and decode. In terms of speed, XviD is the worst offender, requiring more CPU horsepower than DivX for a given video stream. One excellent solution to try is *ffdshow* (see 'Use *ffdshow* for best performance' on page 81).

The good news is that regardless of the compression format you use, you only need an 802.11b wireless network to

stream DVD-resolution video. The even better news is that if you use MPEG-1 with a bit rate of around 1 to 1.5Mbps, it's possible to have two movies streaming at the same time, even on an 802.11b network.

### Streaming HDTV

As we said earlier, streaming HDTV can cause problems depending on the HDTV resolution you're working with. There are three possibilities for resolution: the basic 576p (equating to a 720 by 576-pixel frame size; the same as DVD), 720p (1,280 by 720 pixels) and 1,080i (1,920 by 1,440 by 1,080).

If the program is a 576p type, you can treat it the same as DVD, which has a 720 by 576-pixel resolution in Australian PAL format. However, if it's 720p resolution, your receiving PC will need a 2GHz or faster processor just to keep up with the required video processing. And if you're talking the top-drawer 1,080i HDTV standard, you'd better make sure your receiving PC has a CPU of at least 3GHz (or equivalent).

In any case, you'll have to re-encode the video first, before you do anything else. Depending on your HDTV tuner card, you may find your HDTV recording bit rates are as little as 13Mbps or as much as 25Mbps. Usually, the 25Mbps recordings not only include the HDTV signal, but also the SDTV video transmitted alongside it. The problem here is that even though you may only need the HDTV portion, the whole thing would still have to be transmitted across the network, wasting bandwidth at best, and at worst, dropping frames like there's no tomorrow. That's another good reason to re-encode before you stream.

So, if we're talking serious HDTV, the only two encoding options you have are XviD or

DivX. But despite XviD's open source status, we'd recommend going with DivX — specifically DivX 5.0.2, the last version before the DivX watermark came in. If you don't have it, we've included it on this month's cover discs.

MPEG-1 is fine for DVD, but it just doesn't have the legs to cope with HDTV beyond 576p. As you increase the resolution, you increase the number of pixels your PC has to decode per frame, and jumping from DVD to 1,080i HDTV gives a fivefold increase in resolution. That's enough to send most PCs (and MPEG-1) over the edge. In fact, contrary to popular belief, the issue with transmitting video over wireless networking isn't the networking bandwidth, it's more the PC processor's ability to grab, decode and display the data. As an example, we tried to stream 1,024 by 576 widescreen XviD-encoded 5Mbps HDTV video over an 108Mbps 802.11g network to a 2GHz Pentium 4-M notebook computer. It couldn't do it — the CPU usage was constantly at 100% and frames were dropping like flies.

We had more success with the same video encoded with DivX, but even so, the CPU usage percentage hovered in the mid-90s for most of the time. At that rate, you only need to hiccup to have everything go pear-shaped. By the same token, we had no problem streaming two MPEG-1 DVD streams over an 802.11b wireless network. For HDTV, the biggest issue is the processing horsepower at your disposal, not necessarily the speed of your wireless network.

One last important thing — when you convert the video to DivX, make sure you set the DivX codec to produce a key frame every 12 frames. If you don't, you won't be able to sync up the audio correctly later.

## TOP TIP

### Use LAME on TMPGEnc

If you're re-encoding the audio to MP2 under TMPGEnc, don't use the internal MP2 audio encoder, as it's pretty awful.

Go to Options →

Environmental Setting → Audio Engine and use toolame for MP2 encoding and LAME for MP3 encoding. Install these from this month's cover discs first, then simply start up TMPGEnc, choose to use an external encoder in each option and point to the .exe file with the browse buttons. The 0.2k version of toolame we've included works best with TMPGEnc.

### Streaming VCD/KVCD/ SVCD/analog TV

When it comes to video of smaller frame sizes than typical DVD, you can start making use of older PCs to stream these formats. Basic VCD with its 352 by 288-pixel PAL format and MPEG-1 video compression should even be viewable on a Wi-Fi-enabled Pocket PC PDA.

We were able to stream DVD-resolution MPEG-1 to our 2GHz Pentium 4-M notebook running on the battery at just 1.2GHz with no dropped frames. We suspect it will work with a Pentium-III notebook, even on an 802.11b network.

If you've captured analog free-to-air TV, treat it the same as DVD in terms of your encoding options.

### The server

While much of our discussion has revolved around the network and the decoding PC processing speed, the horsepower of the server and speed of the storage drives starts becoming an issue if you're streaming multiple video files at the same time.

Given that a Super G (108Mbps) wireless infrastructure network can support a high number of connections (some say as high as 25), you need to ensure your server has sufficient horsepower to keep up the processing of those streams to its wireless

### HDTV RESIZE TABLE

HDTV is transmitted in 16:9 anamorphic mode, which basically means the image is stretched vertically for transmission then shrunk by your DTV tuner card player software when played back to give better results. However, to encode it to DivX, you need to correct the frame size to account for it beforehand.

Use the following settings in VirtualDubMod:

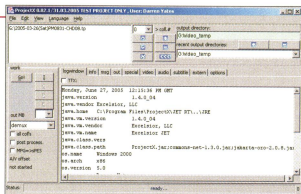
- ◆ 576p: resize the video frame to 720 by 406 pixels
- ◆ 720p: resize the video frame to 1,280 by 720 pixels
- ◆ 1,080i: resize the video frame to 1,440 by 810 pixels. When you play the video in Windows Media Player, the aspect ratio will then be correct.



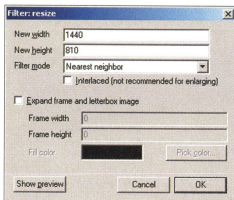


## STEP BY STEP CONVERT HDTV TO DIVX FORMAT

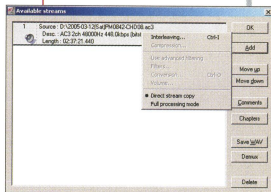
**1** Start up ProjectX, load in your HDTV file and click Go.



**3** Next, start VirtualDubMod, load in the new .avi file you just created. Go to Streams —> Stream Lists —> Add. Look for the AC-3 file created by ProjectX and load it in. Right-click on the new AC-3 stream entry, select 'Direct Stream Copy' and then click OK. Go back to the menu and click Video —> Direct Stream Copy. Go to File —> Save As AVI, choose a final filename and click Save. Follow step 3 from 'Convert DVDs to DivX format' on page 79.



**2** When complete, start VirtualDub-MPEG2 and load in the new .m2v video file. Click Video —> Compression and choose the DivX codec (if it's not there, install the 5.0.2 version from the cover discs). Set the encoding bit rate to 5Mbps and use the Resize filter to adjust the video frame. (Check the HDTV resize table on page 80 for details). Go to File —> Save As AVI, choose a filename and location, and click Save.



network connection. If you plan to have more than one video stream running at any one time, use your most potent PC as the server; for a one-on-one network, use that PC as your viewing box.

The key to video streaming is minimising or balancing out any bottlenecks in terms of bandwidth in any given direction, whether it be the server processor, video bit rate or decoding PC horsepower. At any one point, a bottleneck will result in dropped frames, so knowing the capabilities of your systems, your wireless network and knowing how to get around any problems is vital.

### Enjoy your VOD network

Once you've created your wireless network, enjoying the fruits of your labour is fairly straightforward. All you need is to ensure that each viewing PC has the necessary XviD and/or DivX codecs installed (MPEG-1

is already on every Microsoft operating system from Windows 95) and that you're loaded up with sufficient munchies to make it through a movie.

If you're going to connect your devices so you can watch your movies on your home theatre, here's how.

**1** Check the video outputs of your streaming device and the video inputs of your display device. Use one of the following in order of decreasing video quality: VGA, component video, S-Video, composite video.

**2** Connect one end of the cable to your streaming device and the other end to a suitable video input on your display device.

**3** Check out the audio options on your PC and hi-fi or surround sound speaker system.

Use one of the following (listed in order of decreasing quality): optical digital audio, coaxial digital audio, RCA, 3mm stereo.

**4** Connect one end of the audio cable to your PC/streaming device and the other end to a

suitable audio input on your display device or hi-fi/surround sound speaker system.

If you've got a plasma or other big-screen telly to view your streams with, make sure you use DivX encoding and use a reasonable bit rate. The larger your TV screen, the more any encoding errors (often caused by too small a bit rate) are magnified. Obviously, you have to balance this off with the network and PC processing horsepower you have, but if the quality is too low, you may not think it's worth the effort.

At the moment, working with Dolby surround sound can be tricky, but the step-by-step guide above should give you an idea of how to maintain the AC-3 soundtrack from your HDTV movie recordings. That said, a good audio encode using 224Mbps MP2 or 192Kbps MP3 stereo on a decent surround sound system is still enough to scare the daylight out of you.

Setting up your own in-

### TOP TIP

#### Use ffdshow for best performance

If you're ready to have a good streaming video, give ffdshow a try. It's extremely quick, efficient and supports a swag of formats including MPEG-1, MPEG-2, DivX, XviD as well as Dolby Digital AC-3, MP3, MP2, WAV and many others. It won't solve every decoding problem, but as you'll discover, if you're trying to make do with an older PC, every little bit helps. ffdshow is a decoder only, so you still need to install the main XviD and/or DivX codecs to encode the video.

house VOD network is definitely one of the cooler things you can do with a wireless network. And what's more, with as little as a \$100 investment in two 802.11b wireless network cards, you can get cracking with your existing PCs.



ENTERTAINMENT ANYWHERE

# Extending your wireless network

**Nathan Taylor explains the steps you can take to boost your wireless network.**

It's the perennial problem with wireless networks. Bad reception and congested airwaves often result in the wireless network being far from everything it could be. This is particularly important in the new era of home media networks — it's no fun, when you're streaming a movie over your wireless network, to have your network connection drop out for a few seconds while the wireless connection retrains.

Getting good reception around the home is the key to good wireless performance. If you have strong signal quality, drop-outs will be minimal and the overall performance of your network will increase. At *PC User*, we've compiled a few tips to help you achieve that.

## Getting the position right

The simplest way to get better reception for your wireless devices is to move your access point to a more central location. It may seem like an obvious point, but it's surprising how many people unthinkingly locate the wireless access point in a discreet corner of the study, rather than in a point in the middle of the home or office.

The router should not sit on the floor or next to metal objects, especially those inclined to radiate electromagnetic interference (such as PCs). It's a good idea to avoid metal filing cabinets, whitegoods, PC cases and anything else that will interfere with the wireless signal from the access point.

As an aside, using an antenna extension cable allows you to put your point of reception in a more convenient position, even if you cannot move your access point. Most antennas supplied with access points do not have any kind of stand, however, and some are non-removable.

## Minimising interference

Of course, moving the access point around is not always convenient or desirable, so there are a number of other things you can do to reduce the interference in your home or office. Unfortunately for wireless users, a lot of home appliances use the 2.4GHz band, which is the same radio spectrum used by 802.11b and 802.11g. Most commonly, you're likely to notice a drop in signal quality when somebody in the house is using the cordless phone, or when the microwave is switched on.

There's not a lot that can be done about it, but if you have the opportunity to plan ahead, you should look for home appliances that do not operate in the 2.4GHz band. Some cordless phones operate in the 900MHz or other bands — these are a better option if you're planning to use Wi-Fi, since they won't compete with the wireless devices for space on the airwaves.

The other thing you can experiment with is the signal band you use. When you set up your wireless access point and network cards, you're given a choice between a range of wireless channels. People often just leave the channel on the default (usually channel 1), but it's worth trying out the different channels available, which might work around some devices that

cause interference, and can also solve problems that arise when wireless networks overlap (perhaps your neighbour also has Wi-Fi set up).

## A new antenna

If you're really having problems, one of the best solutions is to get a new antenna for your access point.

Not all access points support replacement antennas. Older access points often have a fixed antenna, but most newer ones will support replacement antennas.

Antennas that come with access points are designed to be omnidirectional; that is, they can receive radio waves equally from any direction. You can buy external omnidirectional antennas that, according to the vendors, have optimum reception and range. Much like TV aerials, however, buying these can be a bit of a lottery — they may solve your problem; they may do nothing at all.

Omnidirectional antennas (and, for that matter, directional antennas) have a 'gain' rating, measured in dBi (decibels over isotropic). dBi is actually a fairly abstract measurement, a comparison of the antenna's reception to a theoretical isotropic antenna, rated on the logarithmic scale of decibels. An antenna with a dBi of four or more will more than adequately

serve most home users. Vendors of access points and expansion cards often won't tell you what kind of antenna comes with the device, but it's usually in the one or two dBi range.

Low-end indoor antennas can cost \$30 to \$50 for devices in the four to six dBi range. At the top end of the product spectrum, 15 dBi outdoor antennas can set you back more than \$300.

A potentially better solution than the omnidirectional antenna, especially if you have the access point located in a corner of the house, or external to the house, is to use a hi-gain directional antenna. Available in either flat-panel or parabolic forms (the latter is typically used for very long-range communications; the former more likely to be mounted on walls in-home), directional antennas cover only a specified area. They have a vertical and horizontal beam width rating, measured in degrees, which specifies the maximum angle at which they can receive wireless signals. Putting one of these in the corner of the home or outside can effectively cover the entire home, although you may find there are 'black spots' if the antenna does not have wide enough reception. Moving the antenna around, like you'd do with a TV antenna, may improve your reception.



On the left, the D-Link DWL-R60AT, an omnidirectional antenna; on the right, the D-Link ANT24-0600, a directional antenna.



## USING REPEATERS



Wireless router



Wireless repeater



Using a wireless repeater can effectively increase the coverage of your wireless network.

Directional antennas have the advantage of high gain, excellent reception and the ability to effectively filter out neighbouring and competing Wi-Fi networks. They can be tricky to get right though, and some planning needs to be done to make sure that the cone of reception for the aerial covers all the areas in which you might want to access your wireless network.

One other thing you can try, if your client PC is a notebook, is to use a USB Wi-Fi card instead of a PC Card. Wi-Fi PC Cards tend to have very small antennas with poor transmission and reception range. External USB devices, while less convenient, often have far better transmission characteristics.

### ➤ Adding access points or repeaters

If you're prepared to spend the money to do so, creating another wireless network is a very simple way of increasing the coverage of your wireless LAN. Adding another access point and linking the two using Ethernet cables connected to a switch is a very simple solution that will provide broad coverage across a large home or office.

However, it's not always

convenient to string Ethernet cable between access points. For the majority of homes that are not wired with Ethernet, there is another emerging solution that may do the trick. A new category of device, the powerline or HomePlug access point, uses the home electrical wiring in lieu of Ethernet to transmit data. The Siemens SpeedStream line of products includes powerline access points, but we have yet to see these products appear in stores in Australia.

As an alternative to running

multiple wireless networks, you can try using a wireless repeater to extend the range of your wireless network.

An increasing number of access points come with the ability to be used as wireless repeaters. A repeater regenerates a wireless network signal, so if you put repeaters every fifty feet or so, you can theoretically extend the wireless network indefinitely. We say theoretically, because using repeaters actually reduces the network's performance. A repeater takes wireless network

information and retransmits it, doubling the number of wireless network packets crossing the airwaves. For this reason, use repeaters sparingly.

D-Link, Cisco, Linksys, ViewSonic, Buffalo Technology and several other vendors offer access points that can be configured to go into repeater mode. For any device set into repeater mode, you need to set the SSID of the repeater to match that of the base repeater, and will usually have to specify the target access point by its unique MAC address. ☹

## ADVANTAGES OF 802.11A

If range and reception are an issue for you, one solution is to try 802.11a in lieu of 802.11g. With its backward compatibility to 802.11b (the original 'Wi-Fi'), 802.11g has emerged as the de facto standard for high-speed wireless communications. But the rarer 802.11a has its appeals.

802.11g uses the same 2.4GHz spectrum as 802.11b. The 2.4GHz band, known as the ISM (Industrial, Scientific, Medical) band, is also used by a number of home appliances such as cordless phones and wireless input devices. These devices can cause interference with wireless networks operating in the ISM band (and you may not have such devices, but your neighbours might).

On the other hand, 802.11a uses the 5GHz band, which is not currently used by any other category of device. It can transmit at the same speeds as 802.11g, and even has a similar 'turbo' mode that

delivers a theoretical 108Mbps.

In terms of interference, the scarcity of 802.11a has another advantage: not many other people use it. If you live in an apartment block or work in a high-density area, you'll probably be familiar with the problem of overlapping wireless networks. In a single zone, you might find five or even more users operating separate wireless networks.

You're competing with those wireless networks for space on the airwaves. Since far fewer people use 802.11a, there's less competition in the band.

You won't find many devices that are exclusively 802.11a, but there are a considerable number of tri-band (802.11b/a/g) devices available. These devices can be switched to support either 802.11g or 802.11a, but cost quite a bit more than pure 802.11g devices — sometimes as much as triple.



ENTERTAINMENT ANYWHERE

# Make a ripping and encoding app

**Darren Yates explains how to build the first part of our new ripping and burning application.**

As a software user, there's one thing that I find constantly frustrating: as soon as I get used to using a handy piece of software, the next version comes along and makes a whole lot of changes, and the new version doesn't work as well as the old one. Even worse is when the program is sold off or taken over by another company and quietly canned.

The good news is that you don't have to put up with this. Armed with a suitable freeware development tool, such as Rapid-Q BASIC, and some well-chosen open source command line apps, it's actually quite easy to develop your own tools and get them to run just the way you like them. That's precisely what we've done. We've put together the *PC User Ripping & Burning Toolbox 2005 (R&B Toolbox)*, a kit that gives you all the software you need to start creating your own applications. The R&B Toolbox, which we think is the first application of its type by an Australian PC magazine, will consist of five sections: ripping and encoding audio CDs, data file archiving, CD/DVD copying, video encoding and general CD/DVD burning. This month, we start with the audio ripping and encoding.

## Linux to the rescue

Last month, when we first discussed the R&B Toolbox, we mentioned that the trick with our Toolbox is that we'll be using Linux apps. The Windows world isn't flush with command line CD ripping tools that actually work, so we had to turn

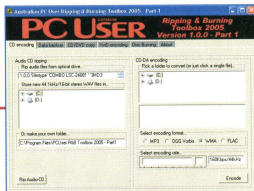
**ON THE COVER DISCS**  
You'll find this first section of the *PC User Ripping & Burning Toolbox 2005* on this month's cover discs. It will run on any operating system from Windows 98 to XP Professional, but the faster your PC's processor, the faster the application will run. You'll also find our special *PC User* edition of *Rapid-Q BASIC* for you to play with.

to Linux's *cdrttools* (<http://freshmeat.net/projects/cdrcore/>) collection for help. As part of this kit, there's a very handy little tool called *cdada2wav*, a command line app that rips audio CDs to perfect 44.1kHz/16-bit stereo WAV files. Some of you will surely be wondering, 'So how exactly do you run Linux apps under Windows?' The trick is to use a version of *cdrttools* that's been compiled to run on Windows instead of Linux.

Don't be confused — it's still Linux code, but it works via a compiled translation layer tool (or emulator) called *Cygwin*. Like most Linux tools, the *Cygwin* dynamic linked library (DLL) is covered under the GNU General Public License (GPL). In a nutshell, it means you can use it for commercial or non-commercial use, provided you acknowledge the copyright owners and make the source code for your application available. You can get more info on the GNU GPL from [www.gnu.org/copyleft/gpl.html](http://www.gnu.org/copyleft/gpl.html).

However, since we're using *Cygwin* only to activate

You'll find the first part of our *PC User Ripping & Burning Toolbox 2005* program on this month's cover discs.



precompiled Linux apps and since our Toolbox doesn't call *Cygwin* directly, we don't need to release the source code for our tool, only the source code for *Cygwin*, the Linux and other command line apps we use. The fact that we're giving away the software for free shouldn't hurt either.

## Ripping CDs

Using *cdada2wav* (and most other Linux tools) creates its own little headache, in that it doesn't recognise Windows' normal drive letter allocation. Instead, you have to access drives by using their device handle, a three-digit number separated by commas. The numbers represent the SCSI bus, target and LUN (logical unit number) of each drive. A typical example would be '1,1,0'.

Why does Linux see IDE, USB and Serial ATA drives as pseudo-SCSI devices? Most likely it's a throwback to its Unix roots, although *why* it does this isn't as important as *how* it does this. Normally, Windows translates this information to a drive letter for you without disclosing its ID; the way we

work around this is that as R&B Toolbox starts up, it runs the command `cdada2wav -scanbus > drives.txt`. What this does is tell *cdada2wav* to scan the system for all of the drives connected — hard drives, USB drives and optical drives — and dumps all of that info using the old DOS redirect output option > to a text file called *drives.txt*.

Our tool then opens that text file line by line, looking for any entry that has the text 'removable CD-ROM'. It then searches that line of text for the device handle and adds it and the drive name to the drop-down list of CD drives you can use. It's not that pretty, but it works like a Swiss watch.

## Encoding GUI

When the application appears on the screen, you'll see a series of labelled tabs and the CD ripping/encoding option ready to go.

Most of the tabs don't do anything yet, but the first screen here is split into two sections: CD ripping on the left and encoding on the right.

One thing to remember

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The *PC User Ripping & Burning Toolbox 2005* is free exclusively to *PC User* readers.

It is to be used for non-commercial, legal applications only, and must not be distributed in any other form without the prior written consent of *PC User* or the author. It is supplied as is with no warranty whatsoever — use it at your own risk.

Note: all source code for the *PC User Ripping & Burning Toolbox 2005* is copyright Darren Yates. Command line tools used in this app are copyrighted by their various owners.





when writing your own software is that a clean graphics user interface (GUI) design is just as important as functionality. Looking at other programs to see how they do things is a great way to learn — just look for tools you find easy to operate and ask yourself why this is so.

Looking at the CD ripping tool, the first thing you do is select which of the available drives you wish to rip the audio CD with. You then choose your own folder location or our default option for where you'd like your soon-to-be created .wav files, and then all that gets added to the text string of command line switches to be executed by Rapid-Q BASIC's **SHELL** command.

Once you've selected the audio CD drive and the place to dump the .wav files, just hit the 'Rip CD' button and you're away.

## Encoding audio CDs

Ripping audio CDs is one example of where we use Linux in this application. When it comes to re-encoding these ripped files, there's a swag of freeware or open source Windows command line apps ripe for the picking. Our tool gives you four encoding options based on such apps: MP3, Ogg Vorbis, FLAC and WMA.

The MP3 encoding is based on the very good LAME 3.96.1 command line encoder (as used in about 1,001 other free MP3 encoders). Ogg Vorbis encoding uses the OggEnc command line engine (from [www.vorbis.com](http://www.vorbis.com)) and I included the open source lossless encoding tool FLAC from (<http://flac.sourceforge.net>) because I'm a snob when it comes to audio encoding.

The WMA encoding is done through Microsoft's own **wm8util** app, which can be downloaded from a number of places on the Web. Although it's also capable of encoding WMV video, we use it to encode our .wav audio files to WMA 8 ones, which is compatible with all WMA-supported DVD players, PDAs and portable music players (except the iPod).

To make our tool easier to use, we've incorporated a simple bit rate sliderbar that changes the bit rate as you pull it across. The bit rate options also change automatically as you select different encoding formats. Since FLAC doesn't support bit rates, it's greyed out here. As you'll see when you try it, we've given you a pretty wide range of bit rates to choose from, which should be more than enough to cover any need.

As an extra feature, each encoded file has the codec and bit rate appended to its filename. For example, track1.wav encoded in MP3 at 128Kbps becomes track1(mp3\_128k).mp3; track2.wav encoded in WMA at 192Kbps becomes track2(wma\_192k).wma and so on. Not only does it make identification easier, but it also allows you to audition different bit rates and codecs to see which of these settings you prefer. You can always rename these later if you wish.

## Next month

As part of our storage guide for next month, the next version of R&B Toolbox adds file archiving capabilities. It uses a freeware command line tool that creates WinZip-compatible compressed files. See you then. ☺

## ABOUT THE COMMAND LINE APPS

Each month, we'll take a look at the real stars behind our Ripping & Burning Toolbox 2005 app and how they work. This month, we look at the first five important tools and the basics of how they work.

### cdda2wav

Example usage: `cdda2wav -D <drive_spec> -d 0 -H -B <outfolder>`

**cdda2wav** is a CD digital audio ripper that works happily under Windows with the Cygwin library, provided you give it the correct drive device number (`<drive_spec>`). The drive device number will look something like **1,1,0**, but is determined by your drive selection. The `-d 0` switch tells the tool to rip the whole of each track, while `-H` tells it not to write any info or **cddb** (CD database) files, and the `-B` switch tells it to copy each track to a separate file. For more details, see <http://cdrecord.berlios.de/del/private/cdrecord.html>.

### OggEnc

Example usage: `oggenc -q <quality_setting> <infile> -o <outfile>`

OggEnc is very easy to use, with the `-q` switch setting the quality of the encode from 0 (blech!) to 9 (bliss), while `-o` sets the output filename. Choosing a quality setting of 6 gives great results. For more details, see [www.vorbis.com](http://www.vorbis.com).

### LAME

Example usage: `lame -h -b <bit rate> <infile> <outfile>`

LAME has a truckload of options, but we're just sticking to the basics

here. The `-h` switch tells LAME to use a high-quality (level 2) encoding algorithm, a good compromise between quality (0) and speed (9), leaning towards quality. The `-b` switch sets the bit rate, in this case is constant (CBR) rather than variable (VBR). For more details, see [www.mp3dev.org](http://www.mp3dev.org).

### wm8util

Example usage: `wm8util -input <infile> -output <outfile> -a <setting> -b <bit rate>`

This Microsoft command line tool encodes not only audio, but video as well. However, for our purposes, we're only using it as an audio encoder. The `-a <setting>` switch sets the encoding bit rate. Our slider control sets it to between 32Kbps and 192Kbps, although you'll find 128Kbps is excellent. For more details, see <http://tinyurl.com/9u08ch>.

### FLAC

Example usage: `flac <infile> -o <outfile>`

FLAC is simple to use and requires no encoding rate parameters. Just give it an input file and the `-o` switch marks the output file; it's that easy. Even in this basic mode, it turns out lossless audio that would be good enough to archive. Compression is upwards of 50% depending on the input file. Check out the FLAC Web site for Winamp plug-ins and tools to convert FLAC files back to WAV format. For more details, see <http://flac.sourceforge.net>

By careful use of string variables and Rapid-Q's **SHELL** command, we manipulate and operate these tools from within our application.



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ENTERTAINMENT ANYWHERE

# Tune in to podcasting

**Radio on demand, via the Internet? *Rose Vines* shows you how podcasting works.**

## ON THE COVER DISCS

On this month's cover discs, you'll find Doppler Radio 2.0, FeedDemon 1.5, iPodder 2.1 and iTunes 4.9.

Each morning, Dave Winer talks to me about his thoughts on blogs, RSS news feeds and programming in general. As one of the prime movers in the development of blogging and its offshoots, Dave's well worth listening to.

Dave talks to me and thousands of others via his podcast, Morning Coffee Notes. It's a very personal take on technology. Listening to Dave, I'm struck by the Internet's knack for transferring the tools of the few into the hands of the many. Podcasting is the latest example of this phenomenon.

## What is podcasting?

Podcasting is radio on demand. It is personal audio books and personalised TV. It's mass media in miniature. Podcasting is many things, but one thing it is *not* is an Apple iPod technology. If you've heard the term floating around and thought it was something purely for the Mac crowd, think again.

Podcasting takes audio or video Web content and delivers it to your desktop or portable media player — so anyone who has a Net connection and can play MP3s can listen to podcasts. What distinguishes podcasting from other types of

streaming media is that it is a subscription service: once you subscribe to a podcast, your podcast software automatically downloads new 'episodes' as they become available, and then syncs that content with your media player.

Podcasting is something like a multimedia version of RSS news feeds. A podcast is a multimedia file inside an RSS wrapper.

As the meeting point for audio blogging and RSS, podcasting delivers Weblogs to new audiences and — via an iPod, iRiver or other portable media player — onto the road.

Podcasting has two huge advantages over text-based blogging. First, it's supremely personal; a text-based blog has nothing on hearing someone speak their thoughts. Second, it's non-visual (unless, of course, it's a video podcast you're watching). It provides a break from the stream of stuff you have to read; instead, you can give your eyes a rest, sit back and listen. If you commute to work, just sync the podcasts with your media player and you have your own radio station, filled with news, commentary and entertainment, to while away the journey.

Podcasting is such a powerful tool that it has been adopted by mass media organisations as well as individual bloggers. Radio National, Triple J and SBS, among others, are all podcasting locally. In the UK, the BBC, known for being quick on the uptake of new technologies, is podcasting

many of its shows. Lance Armstrong and his team made daily podcasts during his attempt to secure a seventh Tour de France win. Governor Arnold 'The Terminator' Schwarzenegger podcasts regularly to his constituents. St Mark's Church in Clayfield, Queensland, podcasts Sunday evening talks.

## Tuning in

Subscribing to podcasts is easy. All you need is:

- ◆ A computer with sound card and speakers
- ◆ A high-speed Internet connection
- ◆ A media player
- ◆ A podcatcher
- ◆ A portable media player, if you want to take your podcasts on the road

You're almost sure to have everything on that list except the podcatcher. For your media player, Windows Media Player (WMP) will do just as well as iTunes; with a little fiddling around, you can also use alternatives such as Winamp.

In essence, the podcatcher is an RSS feed reader with support for 'enclosures'. Many classic feed readers are now adding podcast support. FeedDemon, for example, provides excellent support for podcasts in its latest version. Apple added podcasting support to its media player, iTunes, in version 4.9. Alternatively, you can take your pick from a bunch of purpose-built podcatchers, including iPodder, Doppler Radio and Primetime Podcast Receiver. We've included a selection of these podcatchers on this

month's cover discs.

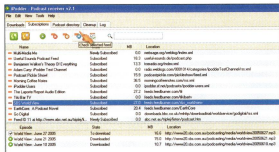
Which to choose? Doppler provides the best integration with WMP, but sometimes has trouble accessing feeds. The iTunes podcast support is neatly done, but iTunes doesn't always play nicely with other media software on Windows, so we don't recommend it unless you're already an iTunes user. Probably the best option is iPodder. Its WMP integration could be better and it displays podcast notes (a text summary of the podcast's contents) in a separate browser window instead of within the podcatcher itself, but in most other ways it's the podcatcher to beat. It's free, it includes a good directory of podcasts, and it's a delight to use. And, as you'll discover, with a little fast footwork you can make it work hand-in-glove with WMP.

## Using iPodder

To discover how easy it is to join the podcasting flock, here's how to add your first podcast using iPodder.

1 Install iPodder and open the program. iPodder inserts a little lemon icon in your system tray, which you can right-click to open the program at full screen. During the iPodder installation, you'll be prompted to choose a folder in which to store your podcasts. We recommend you create a folder within My Music called Podcasts. WMP monitors all subfolders within My Music, so this will help sync your podcasts with your media player.

2 In the main iPodder window, click the 'Podcast Directory'



Once subscribed to a podcast, you can select and download episodes.

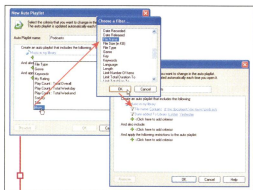
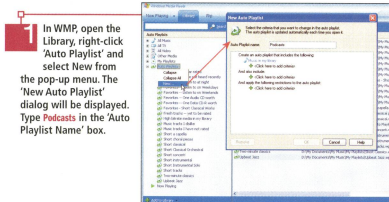
## LISTEN TO THIS ARTICLE

I've created a podcast of this article, so instead of reading it, you can listen to it. To do so, add the following podcast to your podcatcher: [www.geekgirls.com/audio/podpeople.rss](http://www.geekgirls.com/audio/podpeople.rss).



# STEP BY STEP SYNCHRONISE WITH IPODDER AND WMP

iPodder adds your podcasts to Windows Media Player, but this doesn't work as effectively as it should. Here's a workaround that will let you create a podcast Auto Playlist and synchronise that playlist with your portable media player.

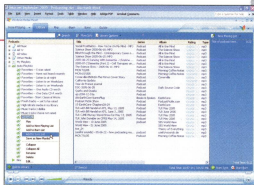


**2** In the 'Music In My Library' section, click the + icon, choose More from the drop-down list and then select 'File Name' and click OK. Type in the name of your Podcast folder (or open the Podcasts folder and then simply copy and paste the pathname from the folder's Address bar).

**4** To set this Auto Playlist to synchronise with your portable media player, right-click the Podcasts playlist and select 'Add To Sync List' from the pop-up menu.



**3** That's all you need to do to add your podcast to a WMP Auto Playlist automatically. But if you want to sync them with a portable media player, you'll need to limit the number of episodes you sync, or things will soon get out of hand. So, while still in the 'New Auto Playlist' dialog, in the 'Music In My Library' section, add an additional criterion by clicking 'Click Here To Add Criteria', select 'Date Added To Library' and set the 'Is After' period to Yesterday. Then click OK.



tab. This is a great place to start if you don't know where to find podcasts for yourself. To see the contents of a folder in the directory, first click the folder itself. This will download the currently available podcasts in that category. Once you've done that, click the + sign beside the folder to view its contents.

**3** Click a podcast's name and then click the Add button.

**4** In the 'Add A Feed' dialog, make sure the 'Go To Subscriptions Tab To See This Feed's Episodes' box is ticked and then click Save. The feed will be added to your subscriptions list. You'll see it on the Subscriptions tab, with its episodes listed below.

**5** You can download a single episode or as many episodes

as you like. Just tick the box of each episode you want, and then click the 'Check Selected Feed' button in the toolbar. The Downloads tab will appear, showing the download progress.

**6** To play a downloaded episode, click the Play button to the left of the episode, or right-click the episode (either in the Downloads tab or the Subscriptions tab) and select 'Play Episode In Media Player'.

If you already have the URL of a podcast, you can add the podcast to iPodder manually:

**1** In the main iPodder window, click the Subscriptions tab.

**2** Click the 'Add New Feed' icon and copy and paste, or type in the URL. iPodder automatically adds the title of the podcast and checks for new episodes.

Now follow steps 5 and 6 above to download the feed.

## Scheduling

Most podcasters produce new episodes on a regular basis. To keep up to date, set your podcatcher to download episodes automatically. In iPodder, select Tools —>

Scheduler, tick the 'Enable Scheduler' button and select a schedule from the options. If you have trouble accessing certain podcasts — some of the popular ones get inundated with download requests — use the 'Check At Regular Intervals' option and repeat every two to four hours.

Podcasts	Podcasting directories	Podcatchers
ABC Radio National www.abc.net.au/mpodcast	Podcast.net www.podcast.net	Doppler Radio www.dopplerradio.net
Dave Winer's Morning Coffee www.morningcafeenotes.com/rss.xml	Podcast Directory www.podcastdirectory.com	FeedDemon www.feeddemo.com
Tour de France podcasts http://feeds.feedburner.com/sirius_tdf_armstrong	PodNova www.podnova.com	iPodder www.ipodder.org
SBS Podcasting www20.sbs.com.au/podcasting	Podcast Pickle www.podcastpickle.com	iTunes www.itunes.com
Triple J www.abc.net.au/triplej/listen/podcast.htm	Podcasting News www.podcastingnews.com	Primetime Podcast Receiver www.primetimepodcast.com/blog



ENTERTAINMENT ANYWHERE

# DIY Xbox media station

**Unleash the Xbox's hidden power by turning it into a Linux-based media centre. Matthew Overington explains how.**

With the release of the Xbox 360 imminent, time is running out to buy the original Xbox. Why would you want to? Well, it's likely the 360 won't be anywhere near as customisable as the original, so you probably won't be able to do what we've done here with a version one Xbox: to build what we consider the best-value media centre system available. This technique does involve opening up your Xbox, it will void your warranty and you may not be able to play Xbox games on it any more. However, it's sure better than throwing away your Xbox when it comes time to buy a 360, and it really isn't that difficult.

The key to unlocking the multimedia power of your Xbox is installing a mod chip. A mod chip allows you to take advantage of the standard PC lurking beneath the consumer-friendly console cover. Although modifying (modding) an Xbox

can allow you to play illegally backed up games, it also opens up the machine to function as a hub for music, DVD and video playback. (This upgrade will categorically *not* allow you to play illegal games on your Xbox.) By default, the Xbox ships with security measures to prevent unsigned software from running on the platform. This means that only Microsoft-licensed software will run. A mod chip opens up the system to be able to run unsigned code as well, meaning it can run homebrew applications or copied software. In the case of this guide, we're going to be running Linux-based media centre software.

Generally, upgrading your Xbox will include the following steps: installing a mod chip; flashing the mod chip BIOS; swapping the hard disk; installing a new Dashboard (sort of an operating system for the Xbox); and finally, installing software. Be warned, though: it will void your warranty and Microsoft can block you from accessing the Xbox Live service if you attempt to go online with a mod chip installed.

## ⚡ Is it legal?

The use of mod chips falls into a legal grey area. What is most certainly illegal is the development and distribution

Many mod chips ship with USB adapters that allow you to connect keyboards and mice directly to your Xbox.



of software based on Microsoft's non-public Xbox compiler (part of the Xbox Development Kit, or XDK) and mod chip kits that allow users to play pirated games. However, you can find mod chip kits and unofficial Xbox software that do not make the above breaches, thanks to an open source developer's kit called OpenXDK ([www.openxdk.org](http://www.openxdk.org)). This developer's kit has spawned a number of alternative Xbox applications, including the ability to turn the system into a Linux-based media centre. Note that by performing this modification and going down the open source route, you probably won't be able to play games on your Xbox anymore. It is possible to set your Xbox to dual-boot with a number of BIOSes, providing the ability to run original games and open source software on the one machine, but that won't specifically be covered in this guide, and usually differs slightly depending on your mod chip. For more information on dual-booting your machine, see your mod chip instructions, or go to [www.xbox-scene.com](http://www.xbox-scene.com).

## ⚡ How to check your Xbox version

Before you begin, it pays to

check your Xbox version number. This will impact the range of mod chips that will suit your machine, as well as installation methods. Since the initial release, Microsoft has tweaked the internal components of the machines only to stay ahead of the mod chip manufacturers, yet the hackers have followed close behind. Mod chips are available to suit every version of Xbox available, from the early 1.0 models right up to the current 1.6b version. There are a few applications available that can make educated guesses on the version of a machine based on its serial number (such as Xbox Identifier, included on this month's cover discs), but they're not completely reliable. One way to check is to boot the system to the Dashboard. Boot the Xbox and scroll down to the settings screen and select 'System Info'. Take note of the K and D numbers that appear at the right of the screen at the end of the scrolling text. If the K number includes 3944, 4036 or 4627, the Xbox is version 1.0. A 4034 Xbox could be either 1.0 or 1.1 (it's almost always 1.0), and if K includes 4817 or 4972, it's a version 1.1 model. Version 1.2 to 1.5 models feature K values of 5101, 5530 or 5713. Most 1.5

## CAUTION!

Before launching into modifying your Xbox to run Linux, bear in mind that your warranty will be rendered void as soon as you open the case. This may not be a concern to you, but some of you may want to think twice before hacking your consoles. What's more, Microsoft can detect modded Xboxes when they go online, and the company will bar any Xbox accessing the Xbox Live service with a mod chip installed. Some more expensive mod chips feature switches to disable them for use with Live, but don't say we didn't warn you. **PC User** cannot be held liable for any damage your console may suffer from modifying it.





## STEP BY STEP OPEN YOUR XBOX

**1** Start out by removing the six T-20 Torx screws that hold the entire system together. Two of the screws are located under the stickers in the centre of the base: one in the serial number box, and the other in the information box with the title, 'Xbox Video Game System'. The other four are positioned under the four rubber feet in the corners of the base.



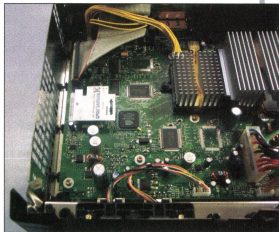
**2** After extracting the screws, turn the Xbox over again and lift the cover off. This will expose the optical and hard disk drives, which can then be removed using a T-10 Torx screwdriver. The plastic frame supporting the IDE drives is in two parts, and the hard disk component should come out first. You'll have to disconnect the IDE and power cables from the hard disk before attempting to pull out the plastic tray supporting it.



**3** The third step is to remove the DVD-ROM drive from the case by removing the two Torx bolts that support its caddy. Be careful to disconnect every cable from the board before you pull it out, paying close attention to the small yellow power cable at the rear of the drive. The yellow cable is particular to the Xbox, so make sure you don't damage it.



**4** After the drives are removed, you're free to install your mod chip. Your mod chip will either ship with detailed installation instructions, or they will be available on the manufacturer's Web site. The Xenium SPICE installation manual found at [www.teamxodus.com](http://www.teamxodus.com) is particularly comprehensive, and we recommend that you opt for this chip, as it will make your life easier.



models feature the 5530 K value, and all were manufactured in August 2003 (the manufacture date is printed on the underside of your Xbox). All version 1.6 models feature a K value of 5838 or higher.

The only sure-fire method is to actually dismantle the Xbox and check the motherboard directly, so prepare to farewell that warranty. Before you open the case, make sure you're working in a clean, static-free environment, and you're wearing an antistatic strap. Be

sure to unplug the Xbox from mains power before you begin working. Follow the steps outlined in the step-by-step guide above to open any version of Xbox, or check the guide at [www.xbox-scene.com/articles/open1.php](http://www.xbox-scene.com/articles/open1.php).

After you've exposed the Xbox motherboard, head over to [www.xbox-scene.com/versions.php](http://www.xbox-scene.com/versions.php) for details on how to tell the models apart. You'll need to use a multimeter to accurately tell a 1.4 from a 1.5 model, but information on

how this works can be found in the online tutorial.

### Buying your mod chip

After sussing out what version Xbox you have, the next step is to buy your mod chip. There are countless online stores selling the chips, but we recommend getting a solderless kit, as it will make life easier for anyone worried about damaging the Xbox motherboard. One model we recommend is the Xenium SPICE, which is available from most online mod chip stores,

### ON THE COVER DISCS

You'll find the following: Gentoo Media Center 1.3 ISO (exclusive to the DVD), Cromwell Linux BIOS 2.40, Xbox Identifier 1.0, WinRAR 3.42 (30-day trial), SmartFTP 1.1 and DeepBurner Free 1.6.

including [www.divineo.com](http://www.divineo.com) and [www.xbox-modchips.com](http://www.xbox-modchips.com). It suits all versions of Xbox from 1.0 to 1.6b and features a quick and painless installation procedure. It's more ➔



## ENTERTAINMENT ANYWHERE

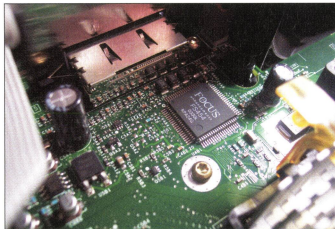
expensive than some of the plain Jane models, but it's a snap to install, and it comes with some handy extras, including a USB adaptor.

Alternatively, another option is to buy a pre-modded system. This is generally more expensive than buying the chip and installing it yourself, as you've got to pay for labour and the added shipping weight of a full system over a chip. You'll still have to install and configure Linux before the system will be fully operational, but you can generally find pre-modded systems with a chip and the Cromwell Linux BIOS installed. Pre-modded systems provide peace of mind, though, and some online shops even provide a warranty on these systems.

### Installing the mod chip

The exact procedure for installing your mod chip will depend on the brand and model that you've selected. We strongly recommend that you opt for a mod chip that suits several different Xbox models, as it will simplify things if you've inaccurately detected which version you've got.

Installation is generally quite



simple and in fact, the hardest part is often removing the case screws and accessing the motherboard in the first place. In the case of the Xenium SPICE chip, it's necessary to locate a region on the motherboard, screw in a pin socket and attach the chip to the top of the socket. The mod chip can be installed in about 10 minutes. From here, the Xbox can be booted, BIOS information backed up, and the new Dashboard or OS installed. Versions that require solder attachments will take a little longer (and a little more care will be needed), but they can usually be completed inside an hour.

At this point, when you put the Xbox back together again, it's a good idea to install a larger hard disk. You'll need to do it to run the Linux-based media centre software, and it allows you to store more media locally. Follow the steps outlined in the step-by-step guide on page 92 to upgrade your hard disk. After installing a new drive and replacing the console cover, you're ready to move onto the software phase. It's the software that really unleashes the power of the system. But before you start flashing the BIOS and adding extra tools, you'll need a way to communicate with the system.

### Connecting a keyboard and mouse

In order to help navigate Linux, it's crucial to fit a USB keyboard and mouse to your Xbox console. Many mod chips

(including the Xenium) ship with a small USB adaptor that you can attach to an Xbox controller port, which converts it into a standard USB connector. This enables you to attach a USB hub and use a mouse and keyboard simultaneously. Alternatively, if you don't mind a bit of cable splicing, you can also follow the instructions found at <http://tinyurl.com/5osqe> to splice a pair of USB ports into the cable of a standard Xbox controller. Although the splicing method has the benefit of allowing the controller to be used along with a keyboard and mouse, it's a little inelegant. It's far easier just to rely on the adaptor shipped with your mod chip.

### Installing the Cromwell Linux BIOS

The current version of the Cromwell Linux BIOS is 2.40, and can be found online at [www.xbox-linux.org](http://www.xbox-linux.org) or on this month's cover discs. Installing the BIOS is straightforward. Most Xbox mod chips come with a basic OS preinstalled, which allows you to add extra BIOS configurations to the mod chip's internal memory. A list of available BIOSes is presented when the machine is switched on, and you can toggle between them. Essentially, this allows you to have your cake and eat it, too — by keeping the original Xbox BIOS and adding the Cromwell Linux BIOS, you can run both games and a Linux distribution.

The easiest way to upgrade

The video chip on your motherboard is a hint to which version your Xbox is.

the BIOS is to use a USB memory key, although it's also possible to perform the upgrade over a network. We've chosen to use the memory key method. Unpack the Cromwell archive from our cover discs using WinRAR and copy the `cromwell.bin` file to a blank memory key. Take the key and, while the console is switched off, plug it into your Xbox via the USB adaptor that shipped with your mod chip. Power up your Xbox and the mod chip's built-in OS should load. From here you can choose to add the BIOS to your Xbox permanently, which will copy it from the memory key.

You should take some time to get to know the OS that's included with your mod chip. Many are quite powerful pieces of software that include handy tools. Most allow you to plug the Xbox into a network and access it from Windows PC. This can be extremely useful if you're looking to back up a hard disk over a network or install new software to the disk.

After installation, you'll be able to choose to load the Cromwell Linux BIOS, which will present a screen asking what location you'd like to boot from. The next step is to point it to our Linux-based media centre OS. For this, we've opted to use Gentoo Media Center (<http://gentoox.shallax.com/>), as it provides full functionality for playing movie files, DVDs, music and images.

The entire platform is based around the popular MythTV Linux application and is extremely easy to use. You can navigate it using your mouse and keyboard, or the Xbox DVD playback kit remote control. The layout is clean and simple, with most of the software functions accessible directly from the main menu. Most of the settings are already taken care of for you, so the only thing you'll really have to

### BE PREPARED

Before you begin, you'll need a few tools:

- ◆ Mod chip (Xenium SPICE recommended)
- ◆ Antistatic wrist strap
- ◆ Xbox USB adaptor (included with many mod chips)
- ◆ T-10, T-15 and T-25 Torx screwdrivers
- ◆ Replacement IDE hard disk (20GB or larger)
- ◆ Multimeter (only needed if you have a version 1.4 or 1.5 Xbox)
- ◆ IDE power splitter
- ◆ USB keyboard
- ◆ Blank USB memory key
- ◆ Blank optical media (DVD-RW recommended)
- ◆ Ethernet patch cable (if you have a router or hub)
- ◆ Ethernet crossover cable (if you want to connect an Xbox and PC directly)
- ◆ Xbox DVD playback remote control (recommended for navigating Gentoo Media Center)



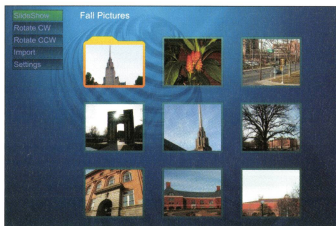
configure before leaping in to use the system is your locale for weather updates. All of the configuration details are found under the Settings menu. From here, it's straightforward to adjust your location, weather units and aggressiveness (how often the Internet weather sites are polled for information).

You can find more information on MythTV—including manuals and guides—at [www.mythtv.org](http://www.mythtv.org).

### ❖ Burning Gentoo to disc

Note that installing your copy of Linux on your Xbox hard disk will first require you to burn it to a writable CD or DVD disc. Xbox DVD-ROM drives are notoriously picky about which type of optical media (and burn settings) you use to create the disc, so you might have to try this several times before the Xbox will read it correctly. We recommend you try burning the Gentoo Media Center file (found on this month's cover discs) on the following media, listed in order of highest compatibility: DVD-RW, DVD-R, DVD+RW, DVD+R and CD-RW. CD-R media tends to be the least compatible, so we recommend you avoid using it. Before burning the ISO to a rewritable disc, ensure that you've completely erased any previous data, as it could affect compatibility. An .iso file is an image of a disc, so you'll have to burn its contents onto the blank media with your PC's CD or DVD burner using a burning application. We've included the free version of DeepBurner ([www.deepburner.com](http://www.deepburner.com)) on this month's cover discs in case you need a burning program.

Start out by saving the Gentoo Media Center 1.3 ISO from our cover DVD to your hard disk. Open DeepBurner and select 'Burn ISO image' and click Next. Click the '...' button next to the 'Image file' box, then browse to and open the Gentoo ISO. Drop a blank disc in your DVD or CD burner and then click the 'Burn ISO' button. DeepBurner will then write all the data to the disc and close it upon completion, so that no



more can be added, which maximises compatibility.

After the image is burned to the disc, load Windows Explorer (Start → Run, type *explorer* and press Enter) and navigate to the disc, where several files should be visible. If only the .iso file is listed, you've mistakenly burned the entire image to the disc, not the data contained within. Head to <http://tinyurl.com/3wjo> for detailed information on how to burn .iso files under a range of popular software applications.

With an upgraded hard disk, a functional Cromwell Linux BIOS and a working keyboard and mouse, you're then ready to move onto installing and using Linux.

### ❖ Installing Gentoo Media Center

Boot the Xbox with the Cromwell Linux BIOS and select 'CD-ROM (hdb)' to boot from the CD. Be aware that you may need to try several different types of media before your drive will load the disc correctly. If successful, the Xbox will start

to load the Gentoo setup software, which will completely erase your hard disk and start installing Linux. The process is quite time-consuming, so don't worry if the Xbox appears to hang or if there's not much activity onscreen for a while.

Eventually the system will restart. Select the Cromwell BIOS again, and this time you should have a new option appear on the menu screen: hda1. This icon represents the hard disk, which is currently configured to install Gentoo Media Center. Select this icon and press the A button (or press Enter on the keyboard) and then the system will go about unpacking Gentoo Media Center on the hard disk. This also takes a long time, although there are constant updates onscreen to let you know that something's happening.

The system will restart, from which point you should again select Cromwell Linux BIOS, and then hda1. This time, you've got two options: MCE and 'MCE Rescue'. The first is used to drive

Gentoo Media Center is based around the popular MythTV media playback application.

the Media Center software, while the second is used to repair a damaged installation. Select MCE and the Xbox will load the configuration wizard to help set up your Xbox. Here's where you'll really need your keyboard for the first time. You'll be asked to enter your display adaptor and desired resolution. If you've got a newer TV, opt for a resolution of 800 by 600 pixels, otherwise 640 by 480 is ideal. Type *PAL* at the next screen to configure your system for an Australian PAL TV, and then enter *13* for both the horizontal and vertical overscan correction values. The system will finalise your settings and reboot again.

The next time you try to boot with the Cromwell ROM, select hda1 and you'll be presented with the Media Center loading screen. You can navigate around the software, but you first need to add media to the system.

### ❖ Copying data to the Xbox

If you have a home network with a hub or router, plug the Xbox into a spare port on the hub using a regular CAT5 network cable. If you don't have a hub or router, you'll need to use an Ethernet crossover cable to connect directly to the Ethernet port on your PC.

If your hub includes a DHCP server, the Xbox will automatically pick up a network address, which will be displayed during the Media Center boot sequence. If not (as in the case with a direct connection via crossover cable), the OS will default to 192.168.1.13.

After connecting the PC and Xbox, you can double-check the connection from the PC by clicking Start → Run and typing *cmd* in the box to launch a DOS prompt. Type *ping ipaddress* to send a ping request to the Xbox, where *ipaddress* is the IP address of your Xbox. A successful connection will result in replies displayed

### HANDY WEB LINKS

Here's a collection of handy Web links to help you when upgrading your Xbox.

◆ [www.xbox-scene.com/articles/open1.php](http://www.xbox-scene.com/articles/open1.php) — a detailed article on

how to open your Xbox.

◆ [www.xbox-scene.com/versions.php](http://www.xbox-scene.com/versions.php) — an article explaining how to check which version of Xbox you have.

◆ [www.xbox-linux.org](http://www.xbox-linux.org) — a Web site dedicated to running Linux on your Xbox.

◆ [openxdk.sourceforge.net](http://openxdk.sourceforge.net) — the main resource for developers looking to build legal software for the platform.

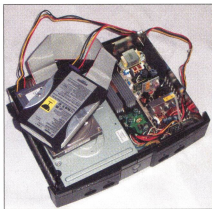
◆ [www.teamxodus.com](http://www.teamxodus.com) — the manufacturer's Web site for the recommended Xenium SPICE mod chip.



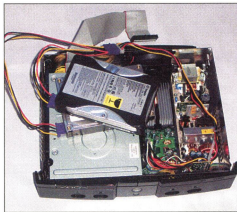
ENTERTAINMENT ANYWHERE

## STEP BY STEP | INSTALL A NEW HARD DRIVE

**1** While you've got the Xbox open to install the mod chip, it's a good idea to upgrade the hard disk. Gentoox Media Center demands at least a 20GB drive, although you might want to go bigger, especially if you plan to store your media files locally on the Xbox. The original hard drive is held in its caddy by four T-15 Torx screws. It's a straightforward process to swap the drive for a larger IDE model. It doesn't matter if you use 7,200rpm or 5,400rpm drives, and most current mod chips support drives over 137GB in size.



**3** Disconnect the IDE cable from the DVD-ROM drive and plug it into the new hard disk. Make sure you leave the yellow drive power cable connected, though. The next step is to boot the Xbox and load the original OS that came on the mod chip. Most current mod chips — the Xenium SPICE included — have the ability to copy the contents of one disk to the other. Select this option, following the onscreen instructions.



**2** Before going too far, you'll have to back up the contents of your original Xbox drive. Most modern mod chips have inbuilt functions that allow you to do this with the machine turned on. Take your large, new hard disk and set the jumper on it to Slave. Next, disconnect the power cable from the original hard disk and attach a power splitter. This will enable you to power both the old and new drives simultaneously.



**4** The backup will take a few minutes, after which you can swap the drives. Remove the old drive from its caddy and drop in the new one. Change the jumper setting on the new drive from Slave to 'Cable select' and remove the cable splitter from the power connector. Complete the upgrade by reconnecting the IDE cable to the DVD drive and replacing the hard disk caddy.

from the remote system, otherwise the request will time out. If you successfully manage to ping the Xbox, copy media to it. Otherwise, go back and double-check your setup.

You can then connect using Windows Explorer. Type `\\mediacentr\` into the address bar and you'll be asked to log in. Enter **media** as a username and **xbox** as the password.

Alternatively, you can add files using FTP. Launch an FTP program like SmartFTP (also on this month's cover discs) and type the IP address of the Xbox in the Address bar at the top of the screen. Click Connect and

you'll be asked to enter a login and password (again, **media** and **xbox**, respectively). After logging in, you can navigate the Xbox's file structure and copy data to be used with Gentoox Media Center. Make sure that you copy video files to the `/media/Videos` directory. Music belongs in `/media/Music`, and images reside in `/media/Pictures`.

After you've finished transferring files to the hard disk, disconnect from the Xbox in the FTP software or close the Windows share folder. Any media that you add to the drive will be available in Gentoox Media Center the

next time you check.

By now you're probably getting an idea of just how powerful and feature-rich Gentoox Media Center is. If your Xbox is permanently connected to the Internet, be sure to spend some time going through the settings page and configuring your favourite Web sites, location for weather updates, and RSS news feeds.

The software lets you play music, view images, and watch movies. Comprehensive documentation is available at <http://gentoox.shallax.com> should you get stuck. And remember, if you break

anything, you can always just select 'MCE Rescue' after choosing `hda1` in the Cromwell Linux BIOS, and have the system reconstruct the entire OS for you.

Make sure that you keep your USB keyboard and mouse handy. If you don't have an Xbox remote (found in Xbox DVD playback kits), you'll need them to navigate, and you may wind up using them to tweak the Media Center configuration further down the track.

All that's left now is to kick back, relax, and enjoy the newfound power of your Xbox console. ☺



# How Shareaza works

**Nathan Taylor looks at Shareaza, the peer-to-peer client that supports many networks.**

It's one of the most loved of all P2P clients, and Shareaza is popular for a very good reason: it's a one-stop shop for all the most popular networks. The single client supports the eMule/eDonkey, BitTorrent and Gnutella networks. Even better, it supports them concurrently for the same download: start downloading a file from one network, and Shareaza can go out onto the other networks and search for that file, and if it is found, begin downloading it from the other networks as well.

We've covered eMule and BitTorrent at some length, but Gnutella will be new to many readers. Gnutella 1 and 2 (Shareaza supports both) work, in practice, very much like eMule. You can perform a text search of the network, or use Web links to start downloads. Gnutella is designed to be serverless, so it can never be shut down by legal action. However, there are far fewer users of Gnutella (many were burned by the poor

**ON THE COVER DISCS**  
You'll find Shareaza on this month's cover discs.

performance of Gnutella 1), so most of your downloads will come from the eMule network.

## Getting started

Recently open sourced, which has sped up the rate of improvement considerably, Shareaza can be downloaded from [www.shareaza.com](http://www.shareaza.com) or this month's cover discs. Getting it up and running takes a bit longer because you have to configure more than one network.

One of the good things about the version 2.1 of Shareaza is that so much of the program is preconfigured for you. Install the application with the default settings for now. Once you've installed it, you'll need to configure a few of the core settings. Click Tools → Shareaza Settings.

In the Settings window, select Connection in the left-hand panel. This will bring up a screen that allows you to set your incoming port number which, as always, will need to be opened up in your firewall software and forwarded on your router. It also allows you to set upload and download speed limits.

Setting the port number and speed limits of Shareaza.

Next, click on Downloads in the left-hand panel. This is where you can set the directories in which files should be saved during download and when complete. Advanced users can also set the maximum number of concurrent file downloads and connections here (these figures apply only to eDonkey and Gnutella downloads, not BitTorrent). If you have a fast connection, you can increase these, otherwise you should leave them as is.

Next, set up the individual networks by clicking on Networks in the left panel. This displays a page with tick boxes for the various supported networks. We recommend switching on Gnutella 2 and eDonkey, but leaving the original Gnutella network switched off. You can finetune the settings for each of the networks if you like by clicking on their names in the left panel. However, this is a job best left to experts, and we don't recommend fiddling if you're unsure of what the settings mean.

Two things you might be interested in doing is setting the number of concurrent BitTorrent downloads (in the BitTorrent tab) and importing any in-progress downloads you might have from an eMule client in the eDonkey2000 tab, so you don't have to wait until all your eMule downloads are finished before migrating to Shareaza.

Once your settings have been configured, you can begin downloading. Click Apply and close the Preferences window. Shareaza takes torrent files much like any other BitTorrent

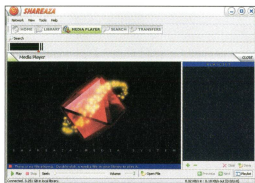
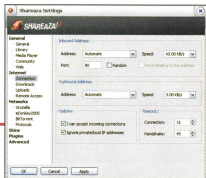
client. As long as the .torrent file type is associated with Shareaza, any torrents you download will open here.

Browsing eMule and Gnutella (a single search does both) is a matter of going to the Search tab at the top of the screen. In the left-hand panel, type in the keywords for the search. You can add filters for the file type and network if you like. A list of hits will appear in the right-hand panel, and double-clicking on any will send them to the Transfers queue. You can have multiple concurrent searches running, and they will appear as tabs just above the window.

The queue of current and pending transfers can be perused in the Transfers tab. Controlling these is very much as in eMule: you can expand the view to see who you're downloading from, and right-clicking on a given item will produce a context menu of options, including an option to cancel the download. Shareaza also has a very nice integrated media player, which can be used to play in-progress downloads, assuming you have enough of the file to play.

Setting up the folders you'd like to share is managed in the Library tab. Open it and click on Folders above the left pane to view your currently shared files and folders. To add another folder, click 'Share Files' at the bottom of the window. Double-clicking on any files in this view will also initiate Shareaza's media player.

Next month, we'll look at the now infamous Kazaa file-sharing system.



Shareaza has an integrated media player from which you can view in-progress downloads.

# Too late to make a boot disk?

**No, it's never too late. Link Harris explains how to create a boot floppy from someone else's PC.**

Last month we explained how to make an XP boot floppy or CD for your PC, from your PC. In summary, to create a boot floppy, you first format it from Windows XP; to create a CD, you make it bootable using an XP image file; and for either, you copy several startup files from the root folder of your PC's system drive. From here on, we'll focus on the boot floppy and not specifically mention the boot CD, although much of the material is equally applicable to the latter.

If you've put off making a boot floppy and suddenly discover that Windows won't start, you can forget about formatting a floppy or copying startup files from your PC. Does this mean you can't create one of these boot boosters? Not at all; it just requires a bit more resourcefulness. You'll need a working PC, preferably running a version of Windows XP, but if you're desperate, you can get by with one running any version of Windows.

In last month's tutorial, we explained how to use a boot floppy to fix problems with one or more of Windows XP's startup files. Of course, there can be other reasons why Windows won't start, so before we get stuck in to creating an XP boot floppy, let's look at some of its limitations.

## ☛ The boot floppy

An XP boot floppy will boot Windows XP to the point where

'Starting Windows' appears on the screen. Therefore, the boot floppy can't help with boot problems that occur after that stage. In particular, if XP won't start because of a botched Registry, the way to get around this is to press F8 after your PC's power-on self-test (POST), but before the 'Starting Windows' message. This will bring up the Advanced Options menu, where you should select 'Last Known Good Configuration'. This will return the Registry to the way it was the last time Windows XP started successfully.

If your PC won't boot because the hard disk has a corrupted or virus-infected boot sector or master boot record (MBR), you can start Windows using the boot floppy. However, it can't help repair these problems, which you should attack as follows:

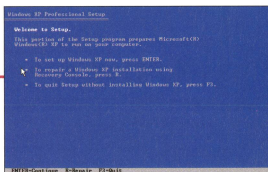
- 1 Do a complete virus scan of your system.
- 2 Start Recovery Console and, if the system drive is formatted with either FAT16 or FAT32, run **fixboot** to write a new boot sector.
- 3 For all file systems, run **fixmbr** from Recovery Console to repair the MBR.

See *PC User* July, page 106, for more details on using Recovery Console and 'Last Known Good Configuration'.

## ☛ XP's forebears

To make an XP boot floppy from a PC other than your own, the first step is to format the floppy. Naturally, you can do this from any PC running either flavour of Windows XP. What may surprise you is that you could also use a computer running Windows Server 2003, Windows 2000 Professional or Server, or Windows NT Workstation

To start Recovery Console, boot with the Windows XP CD and press R when the 'Welcome to Setup' screen appears.



or Server 4.0.

Each of these operating systems formats a floppy the same way, no matter what file system the computer is using: NTFS, FAT32 or FAT16 (which is commonly called FAT). In all cases, the formatted floppy uses the FAT file system, it's bootable and its master boot record points to the file NTLDR in the root folder of the floppy. Beyond that, differences in the operating systems start to surface.

Although the files NTLDR and Ntldetct.com are the same for Windows Server 2003 and both flavours of Windows XP, they are different from the files of the same name for the Windows 2000 families, which are different again from the corresponding files for the NT families. If you've formatted the floppy from any of these XP ancestors, you should copy the files NTLDR and Ntldetct.com from D:\i386 on the Windows XP CD, where D represents the letter for your CD drive.

Finally, if your PC has a SCSI hard disk, copy the appropriate SCSI driver to the floppy and rename the file Ntbootdd.sys.

## ☛ Other versions of Windows

If you can't scrounge a PC running Windows NT or one of its operating system descendants (listed above) to format a boot floppy, you can use Windows 9x/Me and improvise with the first of the six Windows XP Setup boot floppies, as explained in the step-by-step example on the opposite page.

## ☛ Beware the Boot.ini

None of the procedures described in this tutorial include copying the file Boot.ini to the floppy. It's the one startup file that's often unique to your PC, particularly if you're multibooting or your PC has more than one hard disk.

In these situations, you shouldn't try to use the Boot.ini file from another PC unless you know for certain that its XP installation is identical to yours. Instead, you need to recreate Boot.ini from scratch, a project we'll tackle in the November issue of *PC User*.

## ON THE COVER DISCS

Check out the video version of this tutorial on this month's cover discs.

## TOP TIP

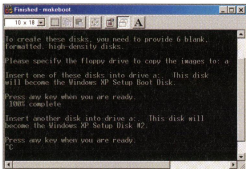
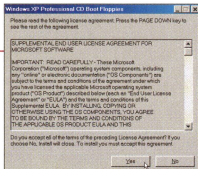
### Give Boot.ini the boot

If your PC has a simple configuration with XP installed in C:\Windows, you can get by without any Boot.ini file on the XP boot floppy. That's because NTLDR won't throw a complete tantrum if it can't find Boot.ini in the root folder of the floppy. Instead, NTLDR reports the file missing, takes a punt that the XP boot files will be located in C:\Windows and then tries looking for them there. Note: that's the limit of NTLDR's resourcefulness. If your XP boot files are located somewhere other than C:\Windows, NTLDR will report 'Windows could not start because the following file is missing or corrupt: <Windows root>\System32\hal.dll. Please re-install a copy of the above file.'

## STEP BY STEP CREATE AN XP BOOT FLOPPY FROM 9X/ME

Use this procedure if your Windows XP PC won't start and you only have access to a PC running Windows 9x/Me.

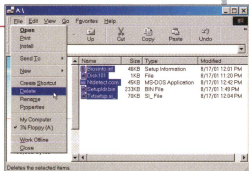
- Download any of the program files for Windows XP Setup boot disks (it doesn't matter which Service Pack or flavour of Windows XP you choose) from <http://tinyurl.com/176d>, double-click on the downloaded .exe file, and click Yes to accept the End User License Agreement (EULA).



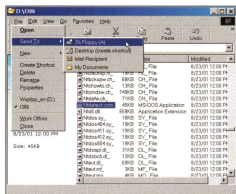
- At the prompt, type the letter of your floppy disk drive — this is usually A. You don't need to press Enter.

- Double-click My Computer, double-click the floppy icon, select all of the files and click File → Delete. Then click Yes to confirm the deletion and Yes to confirm deleting Ntdelect.com.

- This stops the program, as shown in the title bar. Close the MS-DOS Prompt window.

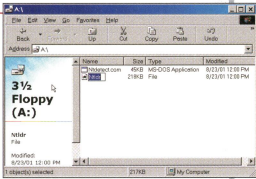


- Insert a floppy disk into the drive and press any key to format the floppy and copy the files.



- Put a Windows XP CD in the drive, click 'Perform additional tasks' → 'Browse this CD'. Browse to the \i386 folder, select the file Ntdelect.com and click File → Send To → 3½ Floppy (A:). Repeat for the file NTLDR. This copies the two files to the floppy disk.

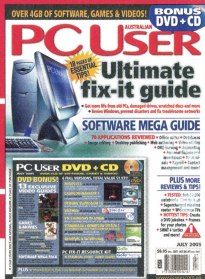
- Select the file NTLDR on the floppy, click File → Rename, type **Seupldr.bin** for the new name and press Enter. Then click Yes to clear the warning box. Seupldr.bin is the filename the master boot record on XP Setup floppy 1 points to instead of NTLDR. If you don't rename NTLDR, when you try to boot with the floppy you'll receive the unhelpful error message: 'Boot: couldn't find NTLDR. Please insert another disk.' If this happens, you have to press Ctrl-Alt-Delete to restart the PC. Finally, if your PC has a SCSI hard disk, copy the driver to the floppy and rename the file Ntbootdd.sys.



- When the prompt for the second floppy appears, press Ctrl-C.

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# Getting more out of image files

**Terry O'Shannassy shows how to use IrfanView to beef up Windows 98's limited imaging features.**

As Windows has developed over the years, new versions have increasingly added features for working with image files. Windows 98, for example, added the capability to display a thumbnail of a selected image file; Windows Me added much more. In Me, all image files in the My Pictures folder can be displayed as thumbnails. Pictures can be viewed in a preview pane, and from there zoomed in or out, printed or rotated. The images in a folder can be displayed fullscreen as a slideshow.

Windows XP added more features again. Any folder used for image storage has extra features available to start with, and a 'filmstrip' view is added for previewing images. The Windows Picture and Fax Viewer is a vast improvement on Windows Me's preview pane, and a task pane in image folders adds one-click access to a number of common actions you can perform on your images.

The good news is that Windows 98 users aren't necessarily stuck with limited image viewing capabilities. Installing suitable software can add all the features of later Windows versions and more to Windows 98. For example, take

IrfanView, the program featured in this article. It adds so much functionality to the system that Windows Me users would also do well to adopt it.

Among IrfanView's features are the following capabilities:

- ◆ Browse any folder for thumbnails of images, and have the thumbnails set to the size and quality of your choice.
- ◆ View all or a selection of images in a folder as a slideshow.
- ◆ Copy, move and delete images.
- ◆ Copy selected images to a data CD or VCD using Nero.
- ◆ Save a slideshow as an executable file or a screensaver.
- ◆ Capture screenshots.
- ◆ Perform batch conversions or renaming of image files.
- ◆ Merge pictures to create a panorama image.
- ◆ Acquire images from a camera or scanner.
- ◆ Crop or resize images, make multiple images into a collage.
- ◆ Apply effects filters.
- ◆ Add text to images.

IrfanView also acts as a 'shell' for your movie and audio files, and provides a rudimentary viewer for watching or listening to them. You can also link your favourite graphics program to IrfanView for more advanced editing features. Before exploring those features, however, we need to get it installed and some of its features tweaked to improve its functionality.

## 2 Installing and tweaking IrfanView

Download IrfanView and start the installation. During the

installation, uncheck the 'eBay Shortcuts' and 'eBay Toolbar' options unless you specifically want to use them. When asked about file associations, we suggest you choose None.

It's not necessary to associate image files and have them open in IrfanView when you double-click them. We can also add right-click context menu items later, which will make file associations redundant.

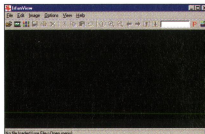
Install the IrfanView plug-ins as well as the program. Start IrfanView, and on the menu bar, click Options → Properties to begin tweaking the program. Make these changes on the following tabs:

- ◆ **Extensions tab.** Click the 'Clear all' button if file types are associated. Select both 'Shell menu' options at the bottom of the tab. (You can come back here at a later date and associate file types if you wish.)
- ◆ **File Handling tab.** Enable 'Jump to the next file after deleting/moving'.
- ◆ **Fullscreen tab.** Select 'Fit to screen: all images/movies'.
- ◆ **Misc 1 tab.** Select the following: 'Jump to next image on page up/page down'; 'Use right mouse button for context menu'; 'Start in fullscreen mode'; and 'Warning on ESC exit'.
- ◆ **Misc 2 tab.** Choose the program you wish to use as an external image editor for advanced image editing. See the 'Top tip' box on the opposite page for details.
- ◆ **Misc 3 tab.** Select the toolbar buttons for Thumbnails and Print.
- ◆ **Video/Sound.** Select 'Use external viewer'.

Finally, click OK to complete your changes.

## 3 Browse image folders

IrfanView provides two ways to browse drives and folders. You can click on the Thumbnails



The unassuming interface of IrfanView hides a wealth of features.

## TOP TIP

### Working with folders

The only real drawback of IrfanView is the lack of a 'New Folder' button when you are selecting storage folders in a number of its functions. The thumbnail browser allows you to create subfolders by selecting and right-clicking a folder icon. It is always good practice to plan out your work and create the folders you will need before starting a job.

icon on the toolbar, or use the desktop shortcut for 'IrfanView Thumbnails'. Alternatively, you can right-click on the folder of your choice from within Explorer or My Computer and select Browse with IrfanView.

The Explorer-style Thumbnails browser has all images in a folder displayed as thumbnails in the right pane of the window. Windows 98 users will likely find this feature a welcome addition. Right-click on one of the images and you'll soon see that the features available from this image browser are staggering. In fact, the feature set outstrips the functionality of Windows XP.

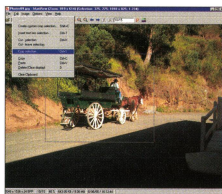
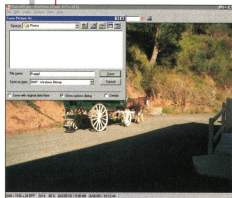
By default, the thumbnails are not high quality. If you want to change the settings, go to the 'Thumbnail browser' and click Options → Set Thumbnail Options. Then, make the following changes: enable 'Use resample'; change 'thumbnail size' to 100 by 100; enable 'Stretch small images' and finally, enable 'Show common shell folders'. Click OK and enjoy more detailed

## WHERE TO GET IRFANVIEW

You can download the full version of IrfanView, as well as the essential collection of IrfanView plug-ins, by visiting [www.irfanview.com](http://www.irfanview.com) and clicking on the Download link on the left menu.

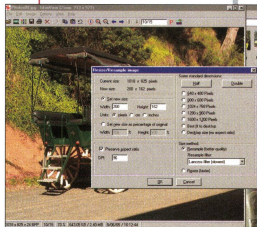
## STEP BY STEP PREPARE AN IMAGE FOR USE ON THE WEB

**1** Be careful when working on images of a lossy file type such as JPEG. Repeated saving of a .jpg file will degrade its quality. Here, an image is being saved as a bitmap (.bmp) file prior to working on it.

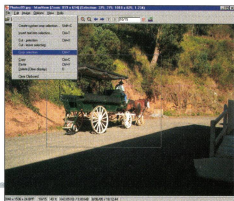


**2** Select the section of the image you wish to use and then click Edit → Crop selection.

**4** With the image suitably altered, choose 'Save as' from the File menu. Select a folder to store it in, give the file a name and ensure it is saved as a .jpg file, so that it is suitable for inclusion on your Web site. Adjust the quality slider in the Options box if you wish. Higher quality means a larger file size and longer load times. A setting of 60% to 70% will be adequate for most purposes, while 80% would be better for photos of people.



**3** Go to Edit → Resize/Resample. A width of 200 pixels is dialup friendly for landscape-orientation images on Web sites, while a width of 150 pixels is perhaps better for portrait images. Of course, you can choose to make your images larger than this if you wish. When you change the image width, the height should automatically change accordingly. Click OK when you're done.



thumbnails, as well as quick access to your desktop and documents folders.

To perform basic image editing, simply double-click a thumbnail to have it open in IrfanView. If you have a graphics program set as external editor, you can edit in that program instead by simply selecting that program from the right-click context menu. The context menu also provides access to many other features.

### Watching slideshows

Displaying your photos one after another in fullscreen on your PC monitor beats flicking through a photo album. Even Windows Me users will welcome the ability to tweak your slideshows so that they display the way you want them to. The slideshow feature of Windows

Me (and XP) simply displays images one after another in the order they appear in the folder. With IrfanView, you can select which pictures are included, change the order in which they appear, save the slideshow as a file, or burn it to CD. You can even set the slideshow to automatically advance pictures, or wait until you press a key or tap a mouse button.

You can run a slideshow by clicking the Slideshow icon on IrfanView's toolbar and setting up the slideshow. You can also select the images you want to display using the Thumbnail browser and selecting 'Start slideshow' from the right-click context menu.

### Image editing

IrfanView's basic image editing features are limited, but still

perfectly capable for most of the editing you'll do. There is no lasso feature provided for working on irregularly shaped sections of an image, but you can select a rectangular section and cut or crop it from the image. Got a snapshot taken at an awkward angle? Simply display the image in IrfanView, use the 'Custom/fine rotation' tool to straighten it up, and then crop the picture to remove the wonky corners. There are any number of such tasks you can easily do with the program.

You can also add effects to your image by downloading and using any Adobe BBF plugins you may find for download from the Internet.

We've only skimmed the surface of what IrfanView can do for you in this article; you'll find lots more creative

### TOP TIP

#### Advanced graphics

To set your favourite graphics program as an external editor, you need to determine the name of the file that launches it. Find the program's entry on the Start → Programs menu, right-click it and select Properties. The entry denoted Target will show the folder path and filename of the file that launches the program. Make note of it, then use the Browse button on the 'Misc 2' tab of IrfanView's properties to locate and select the file, setting that program as your external image editor.

ideas if you visit <http://tinyurl.com/6cjm>, and you'll find some detailed tutorials there, too.

# Desktop publishing in Word

**Turn your documents into classy designs with multiple columns.**  
**Helen Bradley explains.**

If you have information to organise on a page in Microsoft Word, you may find columns a useful tool. Often, they'll let you to create a better-looking document than one using text that flows the full width of the page. Columns not only help you organise text in a newspaper-style format (where text runs through a series of narrow columns), but they also work well with documents such as step-by-step training documents and even some reports and brochures. In this column I show you how to organise text into columns in Word, including how to create a document that looks like it is formatted in columns, but uses tables instead. I'll also show you how you can get the look of columns using linked text boxes that work best in some other situations. I'll also show you which of these techniques you should use and when.

## Column basics

Columns in a Word document allow you to divide the page vertically into two or more sections. Text you type into this sort of document runs down the first section (or column) until it is full and then it snakes over to start again at the top of the second column and so on. If there are no more columns, a new page is begun and the text begins to fill the first column of the new page.

These newspaper-style columns are obviously the tool to use for newsletters, but they also work well for training documents. You will often find

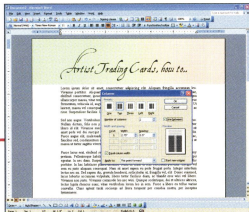
you can get more text on the page if you use columns and that it looks neater and more professional. In addition, text is more easily read when in columns because the column widths are shorter, so the lines of text are correspondingly shorter, too.

Columns are only visible in 'Print Layout' view, so you will need to switch to this view before you work with them. To do so, click View → Print Layout. When you create a document using columns, you can either do this as you type the document, or you can type it first and arrange it into columns later on. To format a document with columns, go to Format → Columns and select the number of columns to use. Typically, on an A4 sheet of paper, you will use two or three columns. Use two columns for training materials; for newsletters, you can use either two or three columns.

By default, all columns are created equal in width, but if you want to change this, disable the 'Equal column width' checkbox and set your own column widths and inter-column spacing instead. The widths are entered in the Width box for each column, and the spacing in the Spacing box. If you are configuring column widths and spacing manually, ensure that you allow adequate spacing between the columns, particularly if your type will have a ragged right margin.

If you use left-justified type then the right margin of the text will have a ragged edge. If the spacing between the two columns is too narrow, the reader's eye will be encouraged to read across the two columns instead of reading down. This is particularly the case when there isn't a neat edge to give them a

The Columns dialog lets you configure the number and width of columns in your document.



visual indication that they've reached the end of the line.

The Columns dialog also has an 'Apply to' setting that lets you specify where the columns start. This is an extremely important setting, particularly in the situation where you want a heading to span the full width of the page and the columns to begin under the heading. In this situation, place your cursor where you want the columns to start and then click Format → Columns and configure your column settings. From the 'Apply to' list, choose 'This point forward' and the columns will begin at the cursor position, after the heading.

If you want a vertical line to appear between the columns, enable the 'Line between' checkbox — the line is black and a fixed width and can't be altered. When you are done, click OK to confirm your settings. If you have the Ruler showing, you will see the column markers on the ruler line. To view the ruler, go to View → Ruler.

If you haven't yet entered the text, you can then start typing in the column. When you reach the right edge of the column, the text will scroll around and begin a new line well before it reaches the right side of the page. When you fill the first column of text, the text will snake back up from the bottom of the first column to the top of the second.

## Managing text in columns

When you want to finish a column of text before you reach

the bottom of the page, press Enter once, click Insert → Break → Column Break and then click OK. The text will then jump to the top of the next column, even though it hasn't reached the bottom of the first.

You can view the column break as you would any other special Word code by clicking the 'Show/Hide ¶' button on the toolbar. Column breaks can be deleted like any other Word code by placing your cursor just in front of the column break and pressing Delete. When you do this, the break will disappear and the text will realign down the first column to fill it and only overflow into the second once the first column is full.

When you're working with columns, and if you need to move between columns, you can either click with your mouse or use these keyboard shortcuts. To move to the next column, press Alt-Down Arrow; to move to the previous column, press Alt-Up Arrow. These commands will only work where you already have text in the column, so if the second column is empty, pressing Alt-Down Arrow won't work.

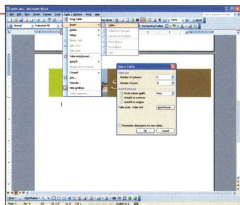
## Adding pictures

When you are working with columns, you can create pictures and clip art objects that span the gutter between the two columns. For example, go to Insert → Clip Art and choose an image to insert into the document. Right-click the image and select Format → Picture → Layout tab. Set the layout to Square or Tight and then click OK. You can

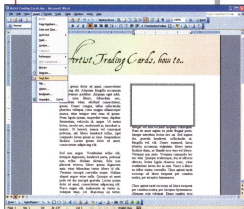


## STEP BY STEP ALTERNATIVES TO COLUMNS

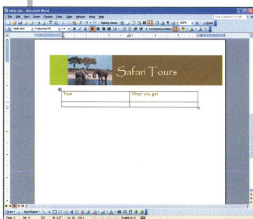
**1** Say you need paragraphs of text to appear opposite each other, but in such a way that adding text to one paragraph will not affect the placement of other text on the page. Here, you should use a table in preference to columns. To do this, click where the table should appear and click Insert → Table.



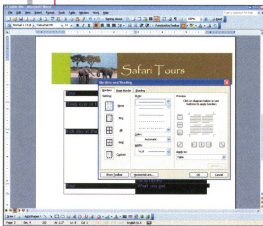
**4** When you want text to flow through a document, but don't want it placed neatly in snaking columns (and perhaps with other text interspersed with it), linked text boxes are a good choice. To create these, click Insert → Text Box and drag to create a text box on the page.



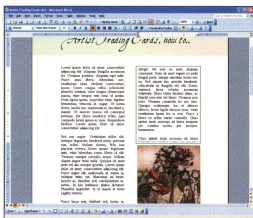
**2** Set up your table with two columns and one row, and click OK. Click in the first cell and type the text for the first paragraph or element in your series of 'columns'. Press the Tab key and type the text that should appear opposite this. Press the Tab key and Word will add a new row to the table. Continue entering information into the table — each cell full of text will stay in a fixed position opposite the text in the cell opposite it.



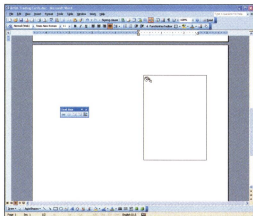
**3** When you are done, go to Table → Select → Table and then Format → Borders and Shading → Borders tab and click None to remove the borders from the table, so they are not visible on the printed page. The result is that you get the impression of columns while ensuring the layout of your text is stable.



**5** Type the text into the text box. If there is too much text to fit in the box, click Insert → Text Box and draw a second text box. It doesn't matter where in the document you do this, except that the second box should appear after the first.



**6** To link the two text boxes, ensure the 'Text Box' toolbar is visible. If not, go to View → Toolbars → Text Box to display it. Click on the first text box and click the 'Create Text Box link' button on the 'Text Box' toolbar. Click in the middle of the second box to link the two. Overflow text will then flow from one box to fill the other.



then drag the image over the break between two columns. Where it overlaps the text in the column, it will push the text so that it scrolls neatly around the image.

To remove columns from a document, select the text that is the subject of the columns and click **Format** → **Columns** → **One** and press **OK**. This will remove the columns and reinstate the text as a single column that spans the full width of the page.

To create a block of text in a series of columns, but which has text following it that spans the full width of the page, first select the text that should appear in columns. Then, go to **Format** → **Columns** and select the number of columns to use. From the 'Applies to' list, choose 'Selected text' and click **OK**. Now, only the selected text will be formatted in columns and all text before and after it will appear as normal.

### Adjusting column settings

When you have text formatted in columns, you can adjust the column width either by using the Columns dialog or by the Ruler bar. To use the Ruler bar, drag on the markers at either edge of the columns and drag them to make the columns wider or narrower. If the column markers won't move when you drag on them, hold the **Alt** key and they will all size together. This will be the case when you have configured columns with equal column widths.

You can balance newspaper-style columns so that the same amount of text appears in each column. You would do this, for example, when you have finished entering your text and when the last column is not full. Go to **Insert** → **Break** → **Continuous**. This will add a section break at this point in the document, evening out the columns, even though the end of the page has not yet been reached. Should you wish to start a new page at this point, click **Insert** → **Break** → **Page Break** and click **OK**. Alternatively, you can simply begin a new set of columns.

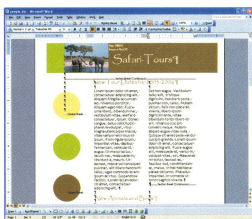
If you find it difficult to see the boundaries of the columns on the page, you can enable guidelines that will help you see what is happening. To do this, go to **Tools** → **Options** → **Text Boundaries** and you will see the columns marked clearly on the page. Repeat these steps to disable this option if you decide you don't like the effect.

### Adding tables to columns

It is possible to add a table to a column layout by clicking **Insert** → **Table** and then creating the table as you would any regular table. A table can span two columns much as an image does. To do this, simply click in the table and then drag the **Move** button that appears at the top-left corner of the table, and then drag the table into position over the break between two columns. Like an image, the table will push the text beneath it out of the way, so it wraps around the table edges.

### Hyphenation

When using columns you will sometime find that the lines of text are much shorter than is desirable. This occurs where



Use the columns feature to create a newspaper-type document in Word.

a long word that should have appeared at the end of a line has been moved to the beginning of the next line because it won't fit. The result is that there is a large gap at the end of the line and the edge of the column looks very ragged indeed.

If you wish to even up the edge of the column, you can employ the 'Word Hyphenation' tool to hyphenate words that appear at the end of a line of text, so that part of the word will fit and the text edge is less ragged. To do this, select the text to hyphenate and go to **Tools** → **Language** → **Hyphenation**. Enable the

'Automatically hyphenate document' checkbox and set the 'Hyphenation zone' and the value for the 'Limit consecutive hyphens to' setting and click **OK**. Word will then automatically hyphenate your text and it will show a more even margin.

Another alternative for column text is to use the full justification option, which is selected by clicking the **Justify** button on the toolbar. This stretches the text to the full width of the column, so both edges are very even and straight. This improves the look of the column.

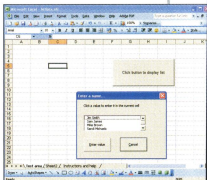
## MACROS OF THE MONTH ON THE COVER DISCS

The Excel macro of the month is a list box that offers a list of names to the user. You can choose a name from the list and then click the 'Enter Value' button on the form and the name will be entered into the current cell in the workbook. The macro is comprised of a user form with the list box, two buttons and a module that contains the code to load the form. The form itself contains code for unloading itself, for populating the list box when the form is loaded, and for placing the selected item in the active cell in the workbook.

The list box is populated using a named range of cells in the workbook — using a named range of cells rather than a fixed range ensures you can add or remove items from the list without having to alter the macro. The macro and form are contained in the file **worksheetlistbox.xls** on the cover discs.

The Word macro of the month is a list of names that you can select from to enter into the current document. It uses a 'multi-select' list box (this feature is configured by setting a list box property), so you can select one or more names. This is more complex and involves processing each entry in the list box to see if it is selected or not, and then adding it to the list for entering into the current document. This list box is populated with a list of names that appear in the macro itself.

You will find there are many similarities between the two macros and their associated user forms, and some differences. The differences are in the loading and processing routines occasioned by the different location of the list data and the different requirements for processing a multi-select list. The macro is contained in the file called **namelist.doc**.



This month's Excel macro is a form that displays a list box from which you can choose a name and it will be entered into the current cell in the workbook.

# Creative formatting with Publisher

**Helen Bradley shows you how to customise Publisher with your own text styles.**

Like any other program, Publisher is quicker and easier to use if it is customised to your particular needs. One of the key features of a desktop publishing program is its ability to format a publication very quickly with your choice of text. This month, we show you two ways you can customise Publisher so that the fonts you use all the time are available when you need them.

## Font schemes

One method of configuring fonts in Publisher 2002 and 2003 to meet your needs is to create a font scheme with a combination of fonts that you want to use together. Then you can apply the fonts to a document with one click, using a series of styles.

The 'Font Schemes' task pane contains a selection of font schemes that you can use with a Publisher document. To see it at work, open a Publisher design template, open the 'Font Schemes' task pane and click a scheme to use. The way the schemes work is that there are a number of styles at use in the document and, when you click a different scheme, the styles will be updated with the different fonts.

In addition to using the built-in font schemes, you can also create your own custom schemes, which work the same way. To do this, click the drop-down list next to a font scheme similar to the one you want to create and select 'Duplicate

### TOP TIP

#### Format with styles

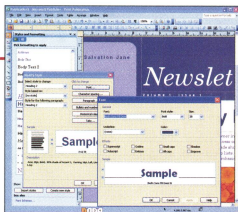
If you use styles to format Publisher documents, then you can apply different font schemes to the publication by choosing one from the 'Font Schemes' list. Each time you select a new font scheme, all the text formatted using styles will change automatically.

Scheme'. Type a name for your scheme and click OK. You will then have a new scheme in the 'Font schemes' list. Click the scheme to apply it to the current document and then click the 'Styles and Formatting' link at the foot of the 'Font Schemes' task pane to open the 'Styles and Formatting' task pane.

Choose 'Show all styles' from the Show list to make alterations to all the styles that are currently available. To alter a style, click the down arrow to the right of the style and choose Modify. Click the Font button in the 'Modify style' dialog then make the desired change to the font name. To change all the styles will take a little time, but the result will be a font scheme that is totally customised.

Once you have made your changes to the styles in the Style list, click the 'Font Schemes' link

Modify the styles in a publication and save these to create your own Publisher font scheme.



at the foot of the task pane and then, from the drop-down list beside your new font scheme, select 'Update scheme to match current publication'. This saves the changes that you have made to the fonts into your scheme.

You can then apply your font scheme as you would any other font scheme. You should note that the font scheme will not generally retain font colour information, but it does retain information about the fonts themselves.

When applying a font scheme to a document, if you find that the size of the fonts in the scheme are too big for the document, so that the text does not show correctly, undo the application of the font scheme. Click the 'Font scheme options' link at the foot of the 'Font Schemes' task pane and disable the 'Adjust font sizes' checkbox. Reapply the font scheme to the document and

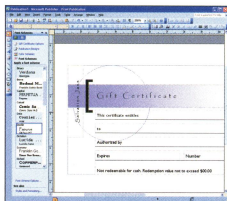
you will find that the text sizes will be more manageable.

## Set a default text style

It is also possible to select a default text style for your blank Publisher documents. Then, whenever you start a new blank Publisher document, the chosen font will be the default used.

To do this, you must create a new Publisher template called normal.pub and save it in the correct location. Begin by clicking File → New and then the 'Blank Print Publication' link. Drag a textbox onto the page, go to Format → Styles and Formatting, and locate the Normal style. Click the drop-down list to the right of this style, choose Modify and then configure the default font that you want to use for all new Publisher documents. You can also select a font colour and size if desired. Click OK twice to set this as the default font.

Click File → Save as and, from the 'Save as type' drop-down list, choose 'Publisher Template (\*.pub)'. Type the file name: *normal.pub*, locate the folder C:\Documents and Settings\username\Application Data\Microsoft\Office (where *username* is your username) and then save the file in this location. Close the file and then, when you click File → New to create a new blank publication, the default font will be the one you have configured. ☺



Font schemes allow you to quickly change the look of all text items in a Publisher document.

# Getting to know Photoshop CS2

**Helen Bradley explains some of the key features of Adobe's new Photoshop CS2.**

As with all new software releases, Adobe Photoshop CS2 has lots of handy new tools and filters for editing and improving your images. Many of these are useful to anyone — from those who use Photoshop for drawing and original illustration, to those who use it for manipulating photos. This month, I show you some of the key new features of Photoshop CS2 and how to put them to work on your images.

## ● The Bridge

Most of what's new in Adobe Photoshop CS2 will not be visible when you first launch the program. The basic interface is pretty much as it always was, but you will find changes immediately if you go to File → Browse. This new browse dialog is called Adobe Bridge and it's an all-new tool for managing images. If you don't have a fast computer you may find that this tool is extremely slow, but it has some powerful options for locating and

managing your images that do help redeem it somewhat.

Included in the Bridge tool is the ability to label images for easier sorting or identification. For example, giving an image a star rating or a colour label can make it easier to locate these images. You can choose to view only images that match the label you've applied. For example, if you assign certain images a purple label, you can then choose to show images with purple labels only, so only these will be visible in the browse dialog.

To apply a colour label, right-click the image, select Label and then the desired colour. You can also apply keywords to an image using the Keywords pane. Apply a star rating to an image by using the Label menu options, or clicking below the image thumbnail and clicking the number of stars to apply. You can then search for images using keywords or ratings later on.

## ● New filters

Back in the program itself, you will find the new Vanishing Point filter. It's designed for use with images that show perspective distortion, where the horizontal and vertical lines in the image do not run horizontally or vertically. The step-by-step example opposite

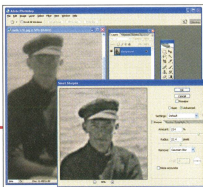
The new 'Smart Sharpen' filter lets you remove blur from images, as well as control sharpening in shadows and highlights.

shows how to use the Vanishing Point filter to add text or other objects to your image.

Another new feature is the Smart Sharpen tool, which might replace the Unsharp Mask as your favourite sharpening tool. The Smart Sharpen tool can be found by clicking Filter → Sharpen → Smart Sharpen. It allows you to not only apply an amount and radius, much as the Unsharp Mask tool does, but you can also remove blur using this tool. For example, you can use the 'Motion Blur' option to remove blur caused by the camera moving when the photo was being taken. Click the Advanced option and you can then manage how heavily sharpening is applied to the shadows and highlights in the image. This gives you more control over the halo effects that you might otherwise get with severe image sharpening.

## ● Other handy tools

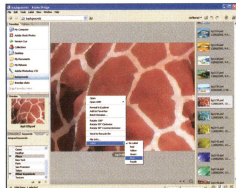
Photoshop CS2 has also borrowed some one-click-fix tools from its younger sibling, Adobe Photoshop Elements 3.0. Photoshop CS2 now has a Spot Healing brush, which shares a palette position with the Healing brush, Patch tool and new red-eye repair tool. The Spot Healing brush lets you click on a flaw in the image and remove it automatically, without you needing to sample



an area of the image first to use as a source point. The Spot Healing brush samples the image around the problem area and uses that data to fix the blemish.

The new red-eye removal tool lets you click on a red-eye problem in an image, and it will attempt to fix it automatically. The tool is similar to the one that appears in Photoshop Elements and it's a simple fix, but it's limited in its usability. For example, it does not fix red-eye in animals and it won't add any colour back into the damaged eye. You may still find that you prefer your existing processes for removing red-eye.

The new Warp tool lets you wrap an image around an object or deform it to fit a shape. While the Vanishing Point tool does a similar thing for flat objects, the new Warp tool can be used to do this for objects that have a curved surface. This tool works very similarly to the Warp Type tool, which has been a feature of Photoshop for some time now. To use it, you must make a selection around the object to warp. For example, to select the background layer, go to Select → All, then click Edit → Transform → Warp and the Warp dialog will appear. You can drag on any point in the grid to adjust how the image is deformed, or you can choose from a series of preset shapes, which appear on the



The new Adobe Bridge lets you assign colour labels to your images, then use the filter to view only ones with certain colour labels.

## GET A TRIAL VERSION

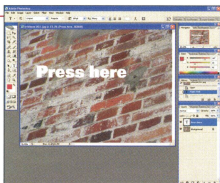
If you don't have Adobe Photoshop CS2, you can download a free trial version from the Adobe Web site at [www.adobe.com/products/tryadobe/main.jsp](http://www.adobe.com/products/tryadobe/main.jsp). This trial version will run for 30 days and you can use it to step through the examples shown here and edit images of your own.



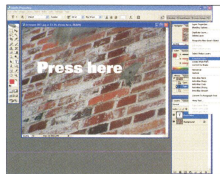
## STEP BY STEP WORK WITH PERSPECTIVE

The new Vanishing Point filter in Photoshop helps you work with perspective in your images, whether you're cloning elements or, as we show here, adding text or other objects to an image.

**1** With your image open in Photoshop, add the text using a new text layer. Click the Text tool, choose the font and size, and type the text onto your image. In the next steps, you'll make it run in correct perspective, taking into account the image you're placing it on.



**4** Go to Filter → Vanishing Point. Click the 'Create Plane' tool in the top-left of the screen and click and drag to create a grid over the image. Adjust the grid so that it lines up along the perspective lines in your image. Use the vertical and horizontal edges of the objects to ensure the grid is correct.

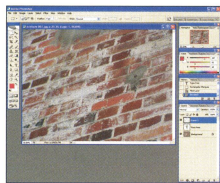


**2** Rasterize the text by right-clicking the text layer and selecting 'Rasterize Type'. This converts the text from a vector object that is editable to rasterized, or bitmap text that is simply made up of pixels and which can't be edited.

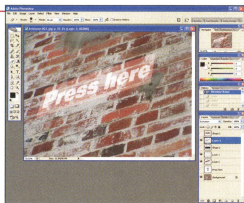


**5** Paste the clipboard object by pressing Ctrl-V, then drag the text into position on the grid. As you do so, notice that the text conforms to the angles that you have drawn over the image. Transform the text by using the Transform tool, and then shrink or widen it as required. When you are done, click OK to return to the document.

**6** You can then finish off the image by creating other elements using a similar process. For example, use a filled rectangle to place behind your text, or add people or other objects.



**3** Make a large selection around the text and go to Edit → Copy to copy the text to the clipboard. Hide the text layer by clicking the layer visibility icon to disable it, and add a new layer by clicking Layer → New Layer and then OK. Finally, disable the selection marquee by clicking Select → Deselect.



'Warp Shapes' menu. These shapes include arcs, bulges, shells, waves and so on. There is also a fish-eye and an inflate option, both of which curve the image outwards. If you choose a preset option, such as Inflate, you can then select

the Custom option and finetune the effect to suit your needs. When you are done, click the 'Commit transform' button to apply the adjustment to your image.

If you work with Photoshop regularly, one feature that may

confuse you initially, but which will be useful, is the ability to Shift-click on a series of layers to create a set of linked layers. When you do this, the layers can then all be manipulated as a group. For example, you can move them all together.

There is plenty else that is new in Photoshop CS2; go to Help → Photoshop Help, and then click the 'New Features' link to see a list of the new features and links to more information about using them. ☺

# Mix it up with ACID XPress

**Philip Moore shows you how to create and mix music in ACID XPress.**

Last month we gave you an overview of what you need to know about making music on the PC. This month, we get down to business and actually make some noise. With the new version of Sony's ACID Pro 5 music software now available, we thought we'd use the free version, ACID XPress, to get you up and running.

There are three basic approaches to modern digital music: audio, MIDI and loops. These three cross over and intermingle in various ways, but it is important to know that they all have different methodologies and standards to deal with. We explained what these were last month. ACID is primarily a loop- or sample-based program. It does offer some audio and MIDI capabilities, especially in the Pro version, but at its heart, and certainly in the XPress version we're going to be using, looping is what it's all about.

## Getting started

Once you install ACID XPress you'll need to register it. After that, when the program first starts, it loads a sample song. Have a listen, and look at how this song is prepared. You can zoom in and out by simply grabbing the scrollbar at the bottom of the track window and lengthening or shortening it.

The song uses all three types of music: audio, MIDI and loops. It is mostly loops, of course, but the MIDI Bass and MIDI Keys tracks play MIDI data out to a DLS softsynth. DLS is ACID's own standard, similar

to VSTi or DXi (supported by ACID Pro), but not nearly as universal. The softsynth used here is supplied with ACID XPress and is a simple GS FM device, which is fine for playing around with. But understand that MIDI can sound so much better. It all depends on the quality of the synth being used.

There is also a simple audio clip on the last track titled 'Piccolo crash'. This is simply a sample of a cymbal that has not been turned into a loop. You can easily tell what type of track it is by the icon that appears on the left-hand side, next to the track number. A curved arrow is a loop, a pointing arrow is an audio track, and a 'plug' (representing the five-pin MIDI plug standard) is for MIDI.

## Dealing with MIDI

Look in the mixer pane down in the bottom-right, and double-click on one of the MIDI tracks you will see there. This will reveal the softsynth properties for that MIDI track. The MIDI features in ACID XPress are incredibly basic, but here's an overview of their capabilities.

There are 16 MIDI channels per synth. This is all the MIDI standard allows for. Synths that offer more than 16 channels do this by creating 'banks'; each one consisting of 16 channels. Each channel can have a different musical instrument sound applied to it. So, you can potentially have 16 MIDI instruments, all going at once from the same synth. Click the 'Enable Real-time' button in the top-right of this softsynth panel and this will allow you to click the piano keyboard onscreen with your mouse and play the MIDI notes.

Try changing the instrument by clicking any one of the 127 available voices. They may not sound too much like a violin or

guitar or whatever due to the limitations of this particular synth, but you will certainly hear a difference in the sound. To be honest, the way ACID XPress handles MIDI is rather confusing and limiting. I would recommend you don't try to use the MIDI features. They are not the best example of what MIDI is capable of.

## Looping in ACID

Start with a fresh slate and open a new project. Audio clips in ACID can be imported directly from any .wav files you have on your system, or instrument samples you can download from a variety of Web sites.

Find a .wav file you want and drag it from the Explorer pane onto the track window. A new track will then be created for you with the name of the file, but nothing will appear in the track. ACID works by having you 'paint' in the tracks. So, with your mouse, drag and draw along the empty track, and the audio clip that belongs to this new track will appear. If it is a short sample and you draw past its full duration, it will instantly loop even if it isn't designed as a looping clip. You will see this as a little notch in the top and bottom of the clip on screen. This is the looping point.

Drag and drop more such clips onto the timeline and draw them in. You may notice something unusual. For the most part, they will all seem to sync together perfectly, and even sound in tune with each other. This is because the tempo and key signature has already been set to a default and all the clips are conforming to this. The default is 4/4 time, 120 beats per minute (bpm), in the key of A Major. You will see this in the lower-left of the timeline pane. Try changing this to see what happens. Change the key and

## WHERE TO GET IT

ACID XPress can be found on the August PC User cover discs, or you can download it from <http://tinyurl.com/8y9xz>.

then change the tempo (the bpm value). Hear the difference?

Take a look at the Explorer window. If you are using loops designed for ACID, there are certain properties embedded into each file. Select one of these files and it will audition for you. Look at the properties displayed along the taskbar at the bottom. You will see how many beats it lasts for and at what tempo. It will also tell you the root note, followed by the sample rate and quality information.

The root note is the note that this sound was originally played at. If your key matches this Root note then the sample will play back exactly as recorded. However, if your key is different, the sample will be pitch-shifted up or down on the fly to match the note it should be in the new key. Likewise, the bpm is what this sample was originally designed to play at. But if you have a tempo faster or slower than this, it will simply be sped up or slowed down to match. You barely have to think about it; ACID takes care of all that.

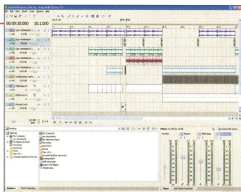
If there is nothing shown on the root note then you are no doubt looking at a percussion track, because percussion and drums have no root note. You don't want them changing in pitch.

## Mixing in ACID

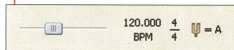
You don't have to simply draw in a complete sample and have it loop. You can cut up these clips and just use bits of them. When you click the cursor on the timeline, you will notice that it jumps to each beat. Select a

## STEP BY STEP CREATE MUSIC WITH ACID XPRESS

**1** When ACID XPress first starts, it loads a sample song. If you have a close look, the sample song contains tracks of all sorts: audio, MIDI and loops.



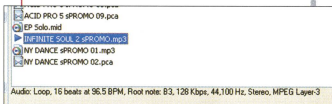
**5** In the lower-left of the timeline pane, you'll notice the tempo, the beats per minute (bpm) and what key the song is in.



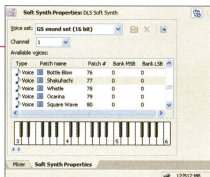
**2** It's easy to tell at a glance what type of track is in a song because the symbols next to the track give it away. A curved arrow is a loop, a pointing arrow is an audio track, and a plug is for MIDI.



**6** Along the bottom of the Properties box for each file, you will see the original tempo and root note, as well as the sample rate and quality information about the clip.



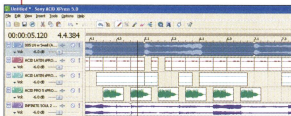
**3** Double-click on a MIDI track and you can take a closer look at the properties for the MIDI file.



**4** Load a .wav file by dragging it from the Explorer pane onto the track window. Then, drag and draw along the empty track to display the audio clip.



**7** You can do all sorts of things with your tracks: delete bits of tracks, copy and paste parts of the track, split the track and drag them around. The possibilities are endless.



beat and clip, and then press the S key on your keyboard to split a clip in two. You can do this on every beat if you want: delete the bits you don't want and keep just one small part of the larger sample, such as the bass drum.

You can copy and paste these snippets by Ctrl-dragging, or using the standard Copy and

Paste commands from the Edit menu. Ctrl-B will allow you to paste multiple times. You can also drag the ends of clips to lengthen or shorten them, just as you did when first drawing it. Of course, you can also grab them with the mouse and move them around.

One quirk of ACID, and this

is true for all versions, is that each track can only have the clip—or segments of it—that it was first created with. You cannot add other loops to an existing track; they must go on their own dedicated track.

These basic principles of ACID make the program quite unique and easy to use, as well

as quite powerful. Working with loops designed for the program, it takes no time at all to build up something original and that sounds great. To create your own ACID loops, you will need a copy of Sony Sound Forge, but that is for a later column. For now, enjoy making music with ACID XPress.

# First steps with Web images

**Helen Bradley**  
explains the basics of  
working with images  
on your Web site.

Images are the visual entertainment of the Internet and it would be a very dull place without them. When you're designing a Web site, pictures are a key element you will include on your pages. HTML offers tags you use to position and format images, as well as optimise how your pages load. This month we look at these and some tricks for layering text over images, including an introduction to CSS positioning techniques.

## Choosing images

Before you begin to add images to your Web pages, it is important to understand what kind of images you can use. For still images, the two formats that are universally acceptable on the Web are .jpg and .gif. Use .jpg to save photographs and complex coloured graphics, and .gif to save simple line art. The former is a compressed and lossy format, and the image data is compressed in such a way that the lost data can never be recovered. On the other hand, .gif is not a lossy format, although it is limited to 256 colours, which makes it suitable for simple images like line drawings, but generally inappropriate for photographs.

To include an image on a Web page, you will use an `img` tag with the name of the image inside it. For example, to include the image `cat.jpg` on a page, use the code ``. This will display the `cat.jpg` image on the page in the

place in which the tag is located. It assumes that there is an image called `cat.jpg` on the server, and that it is in the same location as the Web page that is referring to it.

It is important when you name your files that you use the same text case for the entry `cat.jpg` in the HTML code and for the filename itself. Some server operating systems such as Unix are case sensitive, so that server will assume that `CAT.jpg` is a different file to `cat.jpg`. This is the first thing you should check if your image does not appear on your Web page and there is simply a red cross displayed instead.

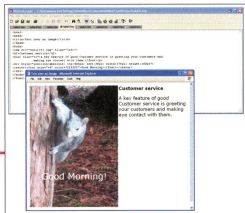
## Organising images

While you can put your Web site images in the same folder as the Web page HTML files, this can get very messy. A better approach is to put the images in their own folder and to then refer to the filename and folder name in the image tag. So, for example, to load the file `cat.jpg` into a Web page where this file is located in a folder called 'images', one level below the place in which the HTML page is located, use this code: ``.

## Wrapping text

An image placed on a page using an `img` tag will be placed in line in the text in the page, which is generally a very ugly result. A better solution is to align images so that text wraps around them. To do this, you use the `align` attribute of the `img` tag. For example, to align an image on the left of the page so the text wraps around it to the right, you would use ``. The text that follows the `img` tag in the HTML code will then wrap around to the right of the image

Using CSS positioning, it is possible to place text over an image.



and continue to do so until the end of the image is reached, when the text will scroll back to the left margin. You can align the image to the right with the text scrolling to the left by replacing `align=left` with `align=right`.

To stop the text wrapping around the image before the bottom of the image has been reached, use a break code. Include this at the point at which you want to return the text to the margin: `<br clear="left">` or `<br clear="right">`.

Text wrapped around an image sits perilously close to the image; in general, much too close. It looks better if you add spacing around the image, but the downside to doing this in HTML is that you must add space to both the left and right of the image or both the top and bottom of the image, and you cannot specify one side or the other exclusively.

To add spacing around an image, use the `hspace` or `vspace` attribute in the `img` tag. So, to add 10 pixels of space to the left and right side of an image so that the text will sit slightly away from it, you would use this: ``.

If you don't like the look of additional space being added to the left and right of the image, add the space into the image itself using your graphics software. Open the image, add the extra space to the canvas to the right of the image, ensuring it is coloured to match the page background, and save it. The extra spacing will give the impression that the text is actually being pushed away

from the image.

## Sizing images

HTML lets you specify the height and width of an image in the `img` tag. It is advisable to do this for all images, particularly large ones, as the browser will read this code and allocate the required space for the image on the page. When the browser knows the image dimensions, it can render the page before the image is fully downloaded from the server. To specify the height and width of an image use a tag something similar to this: ``.

If you specify a height and width that are different to the actual image height and width, the image will be sized to match the dimensions that you have specified. This is a technique to use when you want to use a single image repeatedly on a Web site; in some places at full size and in other places at a reduced size.

When adding an image to a Web page, it is courtesy to visitors who browse with image display turned off or using a text-to-speech browser to add `alt` tags with a description of the image. They will see this tag in place of the image, so they will know what the image displays. A typical `alt` tag for our sample image might be ``.

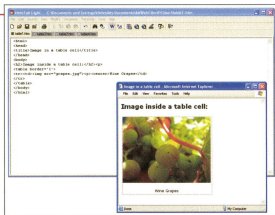
## Images as hyperlinks

To make an image clickable so it does something, such as launch another Web page or a larger image, you must place it in a hyperlink. This is an example of

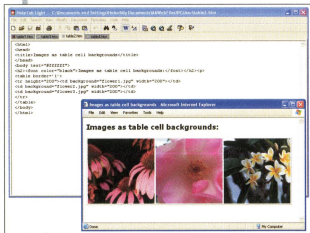
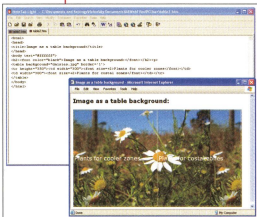


## USE TABLES WITH IMAGES

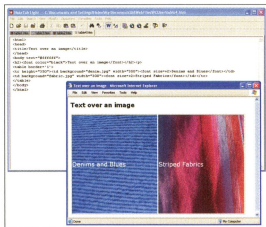
To add an image to a table cell, create the table using HTML code and place the `img` tag inside the `td` elements. The image will appear inside the table cell.



To use an image as a table background, place the `background` attribute in the `table` tag rather than the `td` tag. The image will then appear behind the entire table.



To use an image as a table cell background, use the `background` attribute of the table data `<td>` tag for every cell to have a background image.



To place text over an image in a table cell, place the image in the cell as a background inside the `td` tag and then type the text into the table cell itself.

an image hyperlink that a visitor can click to be taken to the page specified: `<a href="cat.htm"></a>`.

### Images as backgrounds

As well as using images as decorative elements, you can also use them as Web site backgrounds. When you add an image as a background, it will be tiled to fit the page if it is not big enough to fill the browser window. To make your image appear only once on the page you can build it, in your graphics program, so it is large enough that it will not be tiled. To add an image as a page background image, use `<body background="texture.jpg">`.

### Text over images

The step-by-step example above shows how to use images with tables, and includes an example of an image with text placed over the top of it using a table.

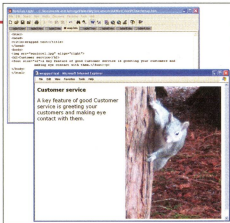
It is also possible to do this using CSS and without using a table. To do this, place the image in the document and use a `div` element to position the text over the top. For example, the code below will perform the task on an image that is 400 by 550 pixels. The placement options in this example define three things: how far down from the top of the page and in from the margin the text will be placed, and the container size that it is limited to.

Using the `align=right` attribute in an image tag lets you wrap text around the image to the left.

```

<div style="position:absolute; top:400px;
left:30px; width:370px; height:100px">
<center>My cat Molly</center></div>
```

There are many ways to use



images on your Web pages, so keep these HTML tags in mind to ensure you optimise their use and manage them better on your Web site. ☺

# Your technical problems solved

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## OFFICE APPLICATIONS

### Prevent format changes

**Q** I have an Excel worksheet that others use. It's critical the column widths stay as they are so the spreadsheet prints correctly, but others who use the spreadsheet continually change them. What can I do? —Peter Maverick

**A** Here's how to protect your spreadsheet.  
**1** Specify the column widths as a fixed value, so they do not change when data in the worksheet changes. To do this, click Format → Column → Width and set a predetermined width for the column. Using this

option will fix the column width and, regardless of the length of the entry in any cell in that column, the column width will not alter.

**2** Select the entire worksheet by clicking the cell at the intersection of the rows and columns in the top-left corner of the sheet. Click Format → Cells → Protection, remove the tick from the Locked checkbox and click OK. This ensures that the contents of all cells in the spreadsheet may be altered in future.

**3** Protect the worksheet by clicking Tools → Protection → Protect sheet and ticking all the checkboxes except the 'Format columns' box. Type a password if required, although if you're simply trying to discourage people from altering column widths, you probably don't need to do this. Click OK and the worksheet will then be protected.

Because of the options you selected, the worksheet is protected against any changes a user might make to the column widths. The Format → Column menu choices are disabled and, in addition, it is no longer possible to drag the marker between the column headings to alter the column widths. —Helen Bradley

### PowerPoint on TV

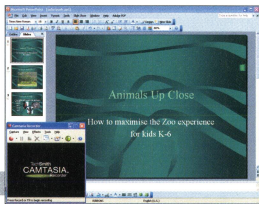
**Q** I have produced a PowerPoint presentation. I want to play it on a DVD using a television set that is not connected to the computer. Can this be done? —Helen Wang

**A** While PowerPoint 2003 contains an option for writing your PowerPoint presentation to a CD, this presupposes that the CD will be placed in a computer and that PowerPoint (or the PowerPoint Viewer application) will be used to play the presentation. Even Producer for PowerPoint can create a number of different files that let you play a PowerPoint multimedia presentation on a Web page, but it still requires access to a Web browser and some plug-ins to display the PowerPoint presentation. In short, these tools, while appropriate for use with PowerPoint on a computer, simply won't work when there is no computer available.

Your best bet is to capture the presentation using an onscreen video capture device, convert it to a DVD format file and burn it to a DVD.

One capture management program that will do the job for you is Camtasia Studio from TechSmith ([www.techsmith.com/products/studio/default.asp](http://www.techsmith.com/products/studio/default.asp)). This application captures the screen and audio for you into a movie file. Launch it, start the recorder and then play your PowerPoint presentation. It will capture the presentation as it plays on the computer screen. You'll do well to reboot before you capture to maximise system resources and you should shut down everything except PowerPoint and Camtasia while you're doing the recording.

When the .avi file has been created and saved, close Camtasia. It doesn't have the tools you need from here on in.



With a screen capture tool like Camtasia you can create a PowerPoint movie and write it to a DVD for playing on a TV.

Instead, use a tool like Sonic MyDVD ([www.sonic.com](http://www.sonic.com)) or one of the Nero products ([www.nero.com](http://www.nero.com)) to make the DVD. In Sonic MyDVD, click the 'Get Movies' button and add the movie to your DVD. If there are multiple movies, add each of them and configure your movie menus. To burn the DVD, save the project and use the 'Burn options' to burn a disc. Once complete, you can play the DVD on any television set and PowerPoint won't be required.

A simpler alternative is to buy a program such as PowerPoint2DVD ([www.powerpoint-to-dvd.com](http://www.powerpoint-to-dvd.com)). This program costs almost US\$100, but it can handle the whole process for you. If you often need to convert PowerPoint presentations to DVD format, it may be worth the investment. —Helen Bradley & Rose Vines

### Function fails

**Q** I have a complex worksheet on which I created a function to make some routine calculations. As this function is needed for other worksheets, I created it on one worksheet, then copied and pasted it to a new module in a new worksheet and saved it as an Excel add-in .xla file. The add-in is listed in the 'Tools Add-in' list and it works perfectly with all other worksheets. Unfortunately, when I remove the function



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from the original worksheet (because it is no longer needed there—it's available via the add-in), the cell references fail and the function shows a #NAME? error in all cells that reference the function. Even if I re-enter the formula in the cell, the same problem occurs. The original worksheet simply refuses to see the Excel add-in file and its functions. Can you help?

—Fergus Darvell

**A** This is an interesting problem. I have managed to duplicate your problem and you are right. The Excel formula fails spectacularly when the original function does not exist on that particular worksheet, even though it exists in the add-in file.

One possible solution is to copy all the sheets in the current workbook to a new file, as these can then be made to recognise the Excel add-in. To do this, follow these steps.

- 1 Select all the sheets by clicking the first sheet tab and then Ctrl-clicking the last one.
- 2 Go to Edit → Move or copy sheet and tick the 'Create a copy' checkbox.
- 3 From the 'To Book' dropdown list, choose 'New book' and click OK. The selected sheets will be copied to a brand-new workbook. You will see that the #NAME? errors still appear, but in this case, you can click each problem cell in turn, press F2 and then Enter and the cell will recalculate using the function from the add-in file, and the error will disappear.

—Helen Bradley

## Automated responses

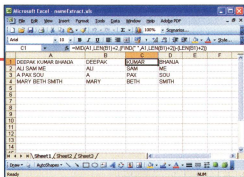
**Q** I have a Word template document and I want the user to answer Yes or No to a series of questions. My users have complained that it is a nuisance to have to type Yes and No all the time. Is there a method I could use, perhaps with a macro, to make the process easier for them?

—Name not supplied

**A** Create a macrobutton field, which will toggle the words Yes and No in a document. To see this at work, first make sure you have the 'Show Codes' button enabled (click the Show/Hide button on the Standard toolbar). Then:

- 1 Click at the position in the document where you want to put the first Yes/No toggle.
- 2 Press Ctrl-F9 to create field code brackets and, inside these, type **Macrobutton selectNo Yes**, then click outside the codes.
- 3 Select the code and press Shift-F9 so only the word Yes appears on the screen.
- 4 Select the word Yes (but not the paragraph marker after it), and click Insert → AutoText → New. Type the name **selectNo** and click OK.
- 5 Redisplay the macro field you just created by selecting it and press Shift-F9.
- 6 Change the wording between the field code braces to read **Macrobutton selectYes No**.
- 7 Press Shift-F9 to hide the code, select the word No (but not any trailing paragraph marker) and create a second

Excel string functions such as **FIND**, **LEN**, **RIGHT**, **MID** and **LEFT** can be combined to extract pieces of text from a text entry in a cell.



AutoText entry by clicking Insert → AutoText → New. Call this entry **selectYes**.

Once you've set this up, create two macros called **selectYes** and **selectNo** to toggle the display by following these steps.

- 1 Click Tools → Macro → Visual Basic Editor.
- 2 In the Visual Basic Editor, click Insert → Module.
- 3 Type the code in **Code A** below into the window.
- 4 Click the Save button on the toolbar and name your document, then close the Visual Basic Editor.

Test the macrobutton field by double-clicking the word Yes—it will change to No, and vice versa. You can create multiple Yes/No fields simply by clicking the one you've created and copying and pasting it to other sections of your document as needed.

There is a file on the cover discs called yesno.doc that contains this solution for you to try out. Note: you may need to adjust the macro security level to run the macros successfully in yesno.doc. To do that, click Tools → Macro → Security and set the macro security to Medium. This will allow you to choose whether or not to run macros contained within a document.

—Helen Bradley

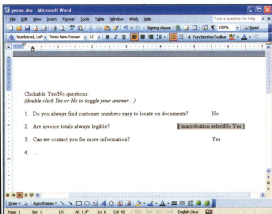
## Axe the task pane

**Q** I use Microsoft Office 2003 and I absolutely hate the 'Insert ClipArt' task pane. It seems to work extremely slowly, if at all, and I get frustrated with having to search for a clip by name when I'd really rather browse the images myself. Is there a workable solution?

—C. Schumann

**A** There are some workarounds. I like to use the Clip Organizer, which is faster than using the search tool, and it lets you preview images and select those you want to use. Click Insert → Picture → Clip Art and click the 'Organize Clips' link at the foot of the task pane. Or better still, open it directly from the Windows desktop by clicking Start → Microsoft Office → Microsoft Office Tools → Microsoft Clip Organizer. If you use it frequently, add it to your Quick Launch bar by holding the Ctrl key while you drag and drop the icon from the Programs menu onto your Quick Launch bar. When you locate an image to use in the Organizer, drag and drop it into your application.

—Helen Bradley



Using the macrobutton field, you can create a toggle to switch between two words in a Word document.

### CODE A

```
Sub selectNo()  
ActiveDocument.AttachedTemplate.AutoTextEntries("selectYes").Insert Where:=Selection.Range  
End Sub
```

```
Sub selectYes()  
ActiveDocument.AttachedTemplate.AutoTextEntries("selectNo").Insert Where:=Selection.Range  
End Sub
```

## INTERNET

## Small text online

**Q** Some Web sites use very small text, making them hard for me to read. I tried to increase the text size using Internet Explorer's 'Text Size' setting (View → Text Size → Largest), but on many sites this seems to have no effect. Is there any way I can increase the text size on such sites? — C. Q.

**A** You're right, the 'Text Size' setting doesn't always work, but there's good news for your aching eyes. You can get around the problem this way:

- 1 In Internet Explorer, select Internet Options from the Tools menu.
- 2 On the General tab, click the Accessibility button.
- 3 In the Formatting section, place a tick beside 'Ignore font sizes specified on Web pages'.
- 4 Click OK twice to exit. This should help with most sites. Unfortunately, on some it will probably cause the text to

appear jumbled. In that case, you'll need to remove the tick from 'Ignore font sizes specified on Web pages' to view the page correctly.

If you use Firefox or Mozilla, you can try to increase text size by pressing Ctrl++ (that is, hold down the Ctrl key and press the 'plus' key (+) on the numeric keypad). Ctrl-- (Ctrl and the minus key) will decrease the size; Ctrl= (zero on the main keyboard, not the numeric keypad) returns the text to its original size.

— Rose Vines

## Blocking programs

**Q** I use ZoneAlarm to protect my computer while I'm on the Internet. When I'm surfing, ZoneAlarm often asks whether I want to allow certain programs to access the Net. How do I know which I should allow and which I should block? — Margaret Brown

**A** ZoneAlarm, like most software firewalls, monitors

when a program on your computer wants to access the Web and when some sort of probe has been made from the Internet to your computer. The trick, as you've discovered, is knowing which ones to allow, and which ones to prevent.

Obviously, you should block almost all probes from outside. Outbound programs, though, need a more selective response. If a program you know to be safe wants to access the Web, for example, you would always allow your Web browser access.

If an unknown program wants to access the Web, be cautious. Chances are it's OK, but it could be a Trojan (virus) or another nasty. Such activity, for instance, is often a telltale sign of so-called advertising spyware, which stealthily collects information about your usage of a program and uploads it when you're online.

Before allowing an unknown program to access the Web, do some research. One way is to use search engines on the Web to look

up the name of the program, and see if they say it is benign or malicious. Another is to check the Readme file that came with the latest signature file for your virus scanning software.

One of the problems is that firewall programs often identify a program trying to access the Web by the actual filename instead of the program's common name. For instance, your firewall may say *iepl.exe* is trying to access the Web instead of Internet Explorer. If you don't recognise the program name, you can always use Windows' Find or Search command (available via the Start menu) to locate the specified filename and see by its location whether it appears to be installed as part of a program you recognise. If so, let it have access.

After a while, as you 'train' your firewall to recognise legitimate programs, you won't have to monitor the activity constantly.

— Rose Vines

## WINDOWS

## Lost Windows key

**Q** I want to reinstall Windows 98 Second Edition, but I've lost the CD key. Is there any way to retrieve it? — Larry Bridge

**A** The Windows product key is stored in the Registry. You can either retrieve it directly from the Registry or, more simply, grab it from the 'System Properties' dialog. To open System Properties, press Windows key-Pause/Break, or right-click My Computer and select Properties. The CD key should appear in the 'Registered to:' section of the General tab.

If it doesn't appear in System Properties or if you want to find the key in your Registry, here's how to do it.

- 1 Click Start → Run, type *regedit* in the Open box and click OK to open Registry Editor. Make sure you don't fiddle with anything in the Registry Editor while you have it open — you can cause all sorts of problems for Windows if you don't know what you're doing.
- 2 Double-click HKEY\_LOCAL\_MACHINE → Software → Microsoft → Windows. Then click CurrentVersion.
- 3 In the right-hand pane, look for the item named ProductKey (if you use Windows XP, the key is named ProductID). The value you see there is your Windows CD key.
- 4 Note down the key and then choose Exit from the Registry

Retrieve your Windows CD key from 'System Properties'.

menu to close the Registry Editor.

To save yourself this trouble in the future, make sure you write the product key on the CD itself (on the printed side, not the data side, of course). In fact, you should do this with all CDs you own. It's easy to lose track of jewel cases, manuals and other items bearing the required

product key, so having the key on the CD itself is the best solution. You can write on a CD using a fine, felt-tip pen.

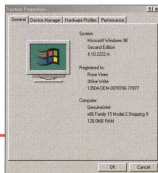
— Rose Vines

## Choosing which program to use

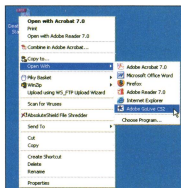
**Q** Sometimes I use Notepad to edit text files and other times I use Word. Is there a way to make Windows give me a choice of editor when I open a text file? — Nella Jenkins

**A** Usually, there's a one-to-one correlation between file types and the applications used to open them. In technical parlance, people say a particular program is *associated with* a particular type of document.

For instance, .doc files are usually opened by Microsoft







The 'Open With' command lets you choose which application will open a specific type of document.

type **Open With Word**.

6 Click the Browse button and navigate to the folder where the Word application is stored (by default, it's C:\Program Files\Microsoft Office\Office — the name of that final folder will vary depending on the version of Office you use). Double-click winword.exe to insert its name into the 'Application used to perform action' box.

7 Click OK and then click Close to exit.

In Windows Me and XP:

1 Open any folder or Windows Explorer window.

2 From the Tools menu, select 'Folder Options'.

3 In the 'Folder Options' dialog, click the 'File Types' tab.

4 Scroll down the 'Registered File Types' list until you find the TXT file type.

5 Click the Advanced button and the 'Edit File Type' dialog will be displayed.

6 Click the New button and the 'New Action' dialog will be displayed.

7 In the Action box, type **Open With Word** and then click the Browse button to locate the Word application. Double-click it to insert its name correctly in the 'New Action' dialog.

8 Click OK twice and then Close to exit from the dialog boxes.

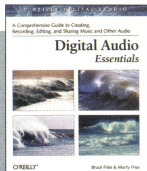
Now, when you double-click a .txt file, it will open in the default application, Notepad. If you want to open it in Word, right-click the file and select your new 'Open With Word' option from the pop-up menu.

You can add as many of these customised 'Open With' commands as you like, but each command must have a unique name (for instance, Open, 'Open With Word', 'Open With WordPad', and so on).

Windows Me and XP also keep a list of applications you've recently used to open a particular file type and create their own 'Open With' submenu. For example, if you edit a .bmp file in both Microsoft Paint and Paint Shop Pro, when you right-click any .bmp file you'll find an 'Open With' option and a cascading menu that lets you choose either Paint or Paint Shop Pro. This is useful because it minimises the list of options on the right-click menu.

All you have to do to get a program inserted onto this submenu is to use the File → Open (or File → New) option within the program with the appropriate file type. You can also add programs to this submenu by using the 'Choose Program' option on the submenu itself.

— Rose Vines ☺



## BOOK REVIEW

### Digital Audio Essentials

This book provides a great resource for digital audio novices and experienced users alike. It introduces the basics, such as listening to digital music on your PC and portable audio devices, and then continues on to more advanced topics, including capturing, editing and distributing audio. You'll learn how to connect your stereo to your computer and digitise your vinyl and tapes, as well as how to set up an Internet radio station. There are step-by-step examples for common tasks, although the book is quite text heavy. Unfortunately, the chapter devoted to copyright only covers US laws, so readers will have to look elsewhere for this information.

— Olga Jevdic

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## GRAPHICS PAINT SHOP PRO DUOTONES

**Q** I am used to creating duotone images in Adobe Photoshop at work. At home I have only Paint Shop Pro available. It appears Paint Shop Pro does not allow you to create a duotone image. Is this correct or is there another way to do this?  
— Name not supplied

**A** Paint Shop Pro does not have a feature that allows you to create duotone or tritone images in the same way you can in Photoshop, but you can get a similar effect using the 'Blend Ranges' tool. You may be unfamiliar with this since it is not a commonly used tool, but it does a very good job.

1 Start with an image that has good contrast. If the contrast is not adequate, perform a Levels or Histogram adjustment to fix it before you begin.

2 Click Adjust → Hue and Saturation → Hue/Saturation/Lightness and drag the Saturation slider to -100 to remove all the colour from the image. Click OK.

3 Duplicate the layer by clicking Layer → Duplicate. Then, display the Layer palette by pressing the F8 key and selecting

the bottom layer in the image.

4 Click Adjust → Hue and Saturation → Colorize. You then need to select a colour and saturation for the darks in the image and click OK.

5 Select the top layer of the image (right now, you will see no change to the final image) and again click Adjust → Hue and Saturation → Colorize. Choose a colour for the lighter areas of the image and click OK when you are done.

6 Right-click the top layer and select Properties → Blend Ranges. On the slider marked 'This Layer', drag the top of the two sliders on the left of the dialog to the right, about halfway across. If you have the preview enabled, you will see that doing this drags the bottom colour up so it shows through the top image, and you'll see the dark areas of the image are coloured with the colours from the bottom layer. The light areas remain the colour of the top layer. Adjust the sliders until you get a pleasing result.

This 'Blend Range' slider can be readjusted later if you need to tweak the final result.

— Helen Bradley

# Copying and pasting tips

**Think you know everything about copying and pasting? Think again, says Rose Vines.**

**W**hen you first start using a computer, learning the required techniques and processes is not usually the biggest stumbling block. The big hurdle is grasping all the new concepts and understanding them deeply enough that you can then focus on step-by-step techniques. Once the concepts start falling into place, acquiring new skills and exploring new programs becomes remarkably easy. But if you're still at the point of wondering 'What's a menu?' or 'What's the difference between storage and memory?' then learning the nuances of how to use a database or edit

a graphics file is a tough slog.

For beginners, one important concept to grasp is the role of the clipboard. The clipboard is the key to copying, cutting and pasting — three of the most useful techniques you'll ever acquire. Even those who've been using computers for years fail to exploit these shortcuts to the full.

## ◆ Meet the clipboard

The clipboard is a tool that lets you copy or cut something from one location and paste it into another. That something may be a slab of text, an image, a fragment of an audio clip, an entire file, or even a group of folders and all the files contained within.

The clipboard is useful, but not particularly smart. In fact, it can hold only one thing in its memory at a time. So, if you copy a column of figures from a spreadsheet onto the clipboard and then copy a paragraph of text from your word processor, the text will replace the spreadsheet figures.

Although the clipboard's memory capacity is limited, its retention is impressive: once you place an item on the clipboard, it remains there either until you place another

item on the clipboard or until you log out of Windows. That means once something is on the clipboard, you can paste it into one location and then another and another. You can copy that column of figures from your spreadsheet and paste it into another worksheet page or an entirely different spreadsheet; you can also paste them into your word processor or even into a graphics program.

Note that although you can copy and paste from one application to another, once you've copied an item into a new application, you can no longer manipulate it in the same way you could in its original location. Take that column of figures: in your spreadsheet functions to sum the numbers or change the contents of a cell, but if you paste that column into a graphics program, all you end up with is an image of the figures.

You have a choice of two techniques for transferring information via the clipboard. Copying and pasting copies an item to the clipboard while leaving the original intact; you can then paste the clipboard contents into as many new

locations as you want. Cutting and pasting deletes the item from the original and moves it to the clipboard, ready for pasting elsewhere.

## ◆ Selection techniques

The key to unlocking the power of copying and pasting is to master selection techniques. Before you can copy anything to the clipboard, you must first select it. The item you select may be a single word, a series of paragraphs, or even an entire spreadsheet.

Table 1 shows you some common selection techniques in Microsoft Word. Most of these techniques will work in any word processing program and similar techniques apply to many other applications as well.

Most basic selection is performed either by clicking or double-clicking an item, or by clicking and dragging over an item. The selected item will be highlighted. You can then copy the selection to the clipboard using any of these techniques:

- ◆ Press Ctrl-C.
- ◆ Right-click the selection and select Copy from the pop-up menu.
- ◆ Click the Copy button on the toolbar.
- ◆ Go to Edit —> Copy.

### TOP TIP

#### Clone a document in Word

The following macro automatically selects all the text in the current Word document, copies it to the clipboard, creates a new blank document and pastes the contents of the clipboard into that document.

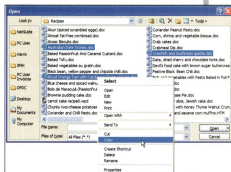
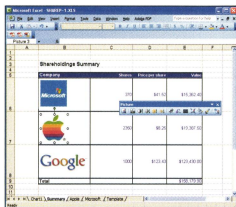
- To create the macro:
1. Click Tools —> Macro —> Macros.
  2. Type CopyAll in the 'Macro Name' box, select Normal.dot from the 'Macros In' list and click Create to open the Visual Basic Editor.
  3. Between the Sub CopyAll() and End Sub statements, type the following:  
 Selection.WholeStory  
 Selection.Copy  
 Documents.Add DocumentType:=wdNewBlankDocument  
 Selection.PasteAndFormat (wdPasteDefault)  
 4. Close the Visual Basic Editor.

**TABLE 1: MICROSOFT WORD SELECTION TECHNIQUES**

To select:	Do this:
A word	Double-click the word
A paragraph	Triple-click within the paragraph
A sentence	Ctrl-click within the sentence
A line of text	Position the mouse pointer in the margin to the left of the line (so it appears as a rightwards pointing arrow) and click
A slab of contiguous text	Click and drag over the text
A slab of contiguous text (alternate method)	Click at the beginning of the text you wish to select, then Shift-click at the end of the selection
A series of lines of text	Position the mouse pointer in the margin to the left of the first line and drag downwards
An entire document	Press Ctrl-A
An entire document (alternate method)	Triple-click in the left margin
A vertical block of text	Alt-click and drag over the text
A column within a table	Position the pointer at the top of the column (it appears as a down arrow) and click
A series of columns within a table	Position the pointer at the top of one column and click and drag over the other columns
A series of non-adjacent columns within a table	Position the pointer at the top of one column and then Ctrl-click the other columns
A row within a table	Use the same technique as selecting a line of text

## STEP BY STEP COPYING TECHNIQUES

Many graphics programs provide a special selection tool (in Paint Shop Pro it's known as a Magic Wand), which lets you select colour-related segments of an image and then copy and paste those segments. It's a neat way to cut a figure out of one background and paste it into another.



Copying and pasting also works in most Open and 'Save As' dialog boxes.

When you paste items between different types of applications, you can no longer edit the item in the same way. For example, if you paste an image into spreadsheet, you'll be able to adjust its size, orientation and brightness, but you won't be able to edit the image itself.

To paste the item into a new location — it could be in the same document, in a different document or even in a different application — click to position the insertion point where you want to paste the text, and then do any of the following:

- ◆ Press Ctrl-V (or Ctrl-Ins).
- ◆ Right-click and select Paste from the pop-up menu.
- ◆ Click the Paste button on the toolbar.
- ◆ Go to Edit → Paste.

To make more advanced

selections such as selecting multiple items simultaneously, hold down the Ctrl, Shift or Alt keys while clicking. Table 1 shows examples of these techniques.

The important thing to remember is that copying and pasting works almost everywhere in Windows: in your applications, within My Documents and other folders, even in dialog boxes and some error message alerts. Thus you can copy and paste not only the contents of a document — or a selected portion thereof — but also entire folders full of files. Try experimenting with selection everywhere: in the headers of emails you receive, on Web pages and in your graphics program.

One word of caution for beginners: whenever an item is selected/highlighted, anything you type *replaces* that selection. For example, if you select a series of paragraphs in Microsoft Word and then accidentally brush the spacebar, the selected text will suddenly disappear to be replaced by a space. Because of this, it's important to deselect your selection as soon as you've performed the copy or cut operation. That way, there's no

chance of accidentally nuking your own document.

## Copying files and folders

Copying and pasting works equally well at the file and folder level as it does within applications. For example, try this technique.

- 1 Open My Documents and click any file within it.
- 2 Hold down the Ctrl key while clicking a number of additional files.
- 3 Right-click any of the highlighted files and select Copy from the pop-up menu.
- 4 Double-click the My Pictures subfolder to open it.
- 5 Right-click in an empty space within My Pictures and select Paste. You've copied the selected files into My Pictures. Had you used the Cut command instead

of the Copy command, you would have *moved* the files to My Pictures.

To undo what you've just done, right-click immediately within My Pictures and select 'Undo Copy' from the pop-up menu that appears.

Note that you're not restricted to selecting files: you can apply the same techniques to entire folders as well.

File and folder copying works within almost all Open and 'Save As' dialog boxes as well as within My Documents. Use the same click, Ctrl-click and Shift-click selection techniques, and then right-click a selected file or folder and select Copy or Cut. Still within the Open or 'Save As' dialog, navigate to the destination folder, right-click in an empty spot and select Paste.

## TOP TIP

### Paste Options in Word

When you paste the contents of the clipboard into a Word 2003 document, a small clipboard icon appears at the bottom of the pasted text. This is the 'Paste Options' button. Moving the mouse pointer over the icon and clicking the down arrow that appears on it will let you select from a number of options, such as maintaining the existing formatting of the text, or removing the formatting ('Keep Text Only'). The latter option is particularly useful if you want to copy all the text from a Web page, but not the images.

TABLE 2: FILE AND FOLDER SELECTION TECHNIQUES

To select:	Do this:
A file or folder	Click it
A series of neighbouring files or folders	Click the first item, then Shift-click the last item
A series of neighbouring files or folders (alternate method)	Click and drag a selection rectangle around all the files/folders
A series of non-adjacent files or folders	Click the first item, then Ctrl-click each of the other items
Select all files and folders within a folder	Press Ctrl-A
Note: you can deselect any single file or folder while leaving the others selected by holding down the Ctrl key while clicking it.	

# Copy your movies

**Helen Bradley says copying a DVD, VCD or SVCD movie is simple with X-OOM Movie Clone 3 Go!**

Chances are, one day you'll encounter the situation where you have a DVD, SVCD or VCD that you want to copy for some reason. You may want to copy the movie to your hard disk, you may want to make a physical duplicate of the disc, or you may want to copy the movie from your hard disk onto a new disc. In any and all of these situations, X-OOM Movie Clone 3 Go! can help. This program makes copies of unprotected

movies stored on DVD, VCD and SVCD to your hard drive or to another disc.

Before you use the program, you should realise that some movies are copy protected using the CSS or content scrambling system — most commercially distributed DVD movies fall into this category. Current copyright laws prevent you from legally copying these movies, even as emergency backups. Accordingly, X-OOM cannot be used to back up or copy these DVDs. If you attempt to do this, you will see a dialog indicating that this cannot be done. The movies X-OOM can copy are those that do not have scrambled or encoded content. In addition, X-OOM Movie Clone is, as its name suggests, a tool for cloning movies, so it

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PC User readers can upgrade to X-OOM Movie Clone 3 Gold for only \$49.95, saving \$30 off the recommended retail price of \$79.95. To upgrade, see the instructions on this month's cover discs. Offer ends February 2, 2006.

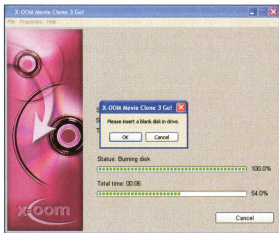
cannot copy or burn data that is not a movie, such as photos or regular files. It can, however, copy movies and slideshows created and burned as movies to DVDs, VCDs or SVCDs.

To make a copy of a DVD onto your hard disk, select the option 'Save DVD/CD files to a hard disk' and then select the source drive, which is the DVD drive containing your disc. In the target area, select a folder on your computer in which to store the video files — make a note of this, as this is where you will find them later on — and then

choose the film options if there is a choice to be made. Click the Options button to configure settings for the entire program. This dialog is only available when you have made a choice of tasks to perform, and it affects all tasks. Click Start and wait as the video files are copied to your computer. When the files have been copied, you will see a dialog confirming this. The movies can then be played from your computer by locating the folder in which they were copied and double-clicking the movie file.

## STEP BY STEP MAKE A DUPLICATE OF A DVD

**1** Provided your DVD is not copy protected you can copy it by first placing the DVD in the drive and then clicking the 'Copy disk' tool from the X-OOM main screen. Select the source drive, the disc format and film options. Click Start.



**2** Wait while the data from the disc is being read. This may take some time. When the disc has finished being read you will receive a message to this effect. Remove this disc from the drive and replace it with a blank DVD.



**3** Wait as the data is then copied to the new disc. If you encounter problems, make sure you close all the programs you aren't using so the computer has plenty of resources available. When it's done, remove the disc and label it.



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# Easy hard drive duplication

If you tinker with your hard disk, Paragon Drive Backup 2004 is a must-have utility, says **Helen Bradley**.

Any time you mess around with your hard disk, you run the risk of damaging something that will make your computer either fail to work or which will compromise your data. If you're the kind of person who likes to tinker with your hard disk and its structure, then Paragon Drive Backup 2004 is a utility that could save you from impending disaster.

Paragon Drive Backup 2004 works differently to other disk backups in that it makes an

image of your disk and saves it either to another disk, or splits it across a number of DVDs or CDs. Of course, to do this you will need to have sufficient CDs or DVDs available (or sufficient space on another computer) to write the image that you need to back up your system.

This program is less suited to the casual user who simply wants to back up files for security. However, it is an invaluable tool for someone who likes to tinker with their PC. If you save an entire partition or disk image, then you can restore it intact at

any time. You can also use this program if you plan to replace your primary hard drive with another hard drive—this program lets you duplicate all the data and settings from one disk to another.


When you launch the program, you will see the current partition and drive structure of your computer. You will most likely have multiple partitions, each of which stores different information. To browse a partition, right-click the partition in the list and select

improved features in this version allow you to easily and simply create a backup of an entire hard disk with data files, system and hidden files, compressed and encrypted files, boot records and much more. Bootable backup images can be saved to local or network drives, or burned directly to CD/DVD. You can also boot the backup images from the CD/DVD backup archive and restore the data safely and independently.

## SPECIAL UPGRADE OFFER

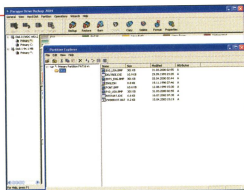
PC User readers can purchase Paragon Drive Backup 7.0 Personal Version for half the recommended retail price, thanks to the Paragon Software Group. Normally sold for US\$49.95, PC User readers can purchase the software for only US\$24.97. Simply go to [www.drive-backup.com](http://www.drive-backup.com) and click the 'BuyNow' button to upgrade. Enter the coupon code **pcuseraw** to claim your discount. This offer is valid until September 1, 2005. The

'Browse Partition' to view its contents. If you're not completely sure what you are doing, avoid making any changes to your system or making a partition inactive, for example.

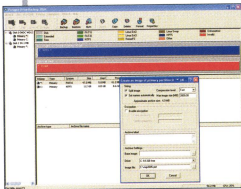
The step-by-step example below shows you how to create a disk image of a partition. The program also has other options, such as wizards to copy a disk and to undelete deleted partitions from your disk. You will find these on the Wizards menu. Check the program help for more information. 

## STEP BY STEP BACK UP YOUR HARD DRIVE

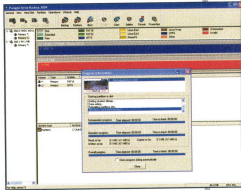
**1** Launch the program and view the partitions that are available for backing up. You can browse a partition by selecting 'Browse partition' from the shortcut menu. To select a partition for backup, click it in the list, right-click and select 'Create an image of partition'.



**2** Configure the options for naming and storing the backup image file. You can specify a location for it either on the current disk or a different one. Click OK and the partition file information will appear listed in the window.



**3** The file isn't actually created at this stage; to create it, click the partition archive file entry and click the Apply button to apply changes to it. You can then burn the file to disc or back it up for safekeeping.



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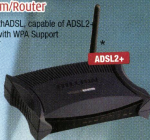
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# Split and join files

**Helen Bradley explains just how handy it can be to break up files into little pieces.**

How often have you tried to copy a file onto a disk and found that it's simply too big? Often, it's either bigger than the disk, or there's not enough room left on the disk for it to fit. In this situation, you could search out a bigger disk or, better still, use the Ashampoo File Splitter & Joiner that's comes free on this month's cover disc.

When you use Ashampoo Splitter & Joiner, you have two

choices: to either split a file or put it back together. Of course, until you've actually split a file, you won't be able to join the pieces, so start by splitting a file into smaller pieces.

To do this, you must specify the file to split and the size of the pieces to break it up into. There are preset options for sizes that match floppy disks, CDs and Zip disks, as well as a user-defined size. Once you've selected the size, simply click Next and the file will be automatically split up for you. The filenames of the individual parts are the same as the original, with an additional extension (.part00000, .part00001, and so on) to make the pieces easy to identify.

To rejoin a file, you simply

## SPECIAL UPGRADE OFFER

PC User readers can upgrade to Ashampoo WinOptimizer Platinum Suite 2 for only US\$19.99, saving US\$30 off the recommended retail price of US\$49.99. To upgrade, visit [www.ashampoo.com/shop/1106/upgrade\\_edition](http://www.ashampoo.com/shop/1106/upgrade_edition) and follow the onscreen instructions.

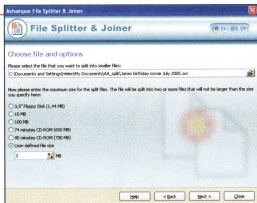
specify one of the parts — any one of them — and the program will locate and join all the components into a single file with the original filename. Make sure that all the pieces are in the same folder and that there is sufficient space on the computer for the joined file in addition to all the parts. When you have successfully rejoined the file, you can remove the parts if they're no longer required.

For more information on

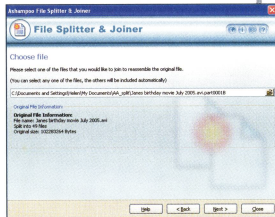
the program, access the help file by clicking the question mark icon in the top-right of the screen. The Options menu lets you specify a language for the program and a skin if one is available. There are additional settings for receiving news and updates from the program developer. Clicking the 'I' button displays information about the program, and clicking the Internet menu provides access to the developer's Web site.

## STEP BY STEP USE ASHAMPOO FILE SPLITTER & JOINER

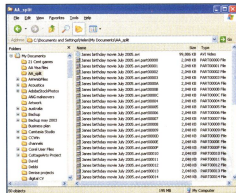
**1** Start by clicking the 'Split a file into smaller files' option, then locate the file to split and click Next. Set the maximum size for each part by clicking an option button and, if you like, you can select 'User-defined file size' to set the size. Click Next and the file will be split.



**2** When the file splitting is complete, you'll see a message confirming this. Check the folder containing the original file and you'll see the original and the multiple parts of the file all in the one folder. Before you reassemble the file, make sure all the parts are in the one folder.



**3** When the file reaches its destination, use the program to join the files by launching the program and clicking the 'Join a set of split files' option. Select one of the split files and click Next to reassemble them back into a single file.





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ENTERTAINMENT ANYWHERE

# Play PC videos on your TV

**Nick Mailath tests media players that let you access your PC multimedia files in the lounge room.**

With so much multimedia available on your home PC, bridging the gap between your computer and your lounge room has become almost essential. The network media players reviewed here are the perfect solution for playing your media on your TV or stereo without needing to move the PC right next to it.

In most cases, all you need do is run a network cable from

your router to the player to gain access to all your PC's videos, pictures and music. There will usually be some software to install onto your PC, too.

## What we found

Most of the new players being released feature wireless networking, which while convenient, can be a hassle if your router is a few rooms away. If you are set on using wireless to stream your media, make sure you have good signal strength where you will be placing your player. In our testing, we found wireless streaming struggled with HD-quality video, even at full signal strength. If wired networking is available, it is much better suited for streaming the higher bit rate HD video.

## What to look for

When buying a device like the ones reviewed here, there are a few things to be considered. First off, you should have a look through your PC media collection and make note of what formats are used. Buying a player that is compatible with the majority of your media files will save you lots of time otherwise spent re-encoding.

How you will connect the player to your network is also important. Find out if you will have enough signal strength to stream your files wirelessly, or alternatively, where you will run the CAT5 networking cable.

The units we tested varied in size—some were only the size of a hardcover book; others were similar to a full-width DVD

## HOW WE TESTED

Each of the players was tested using the highest-resolution output available on a 40in NEC MultiSync LCD monitor. A variety of different media types were used to test the player's ability to handle the many different types of media available. All the players were tested on a wired Ethernet network and also using Wi-Fi (802.11g) networking where available.

player. They also varied in extra features, with two out of the four players including DVD players. Your PC also plays a key role in bridging this gap smoothly; make sure your system meets the requirements of both the player and software before making a purchase.

## Buffalo Link Theater

The Buffalo Link Theater looks like a relatively standard DVD player, but underneath its deceiving shell lies a full-featured network media player, and this little beast even supports progressive-scan DVD. Two antennas for its wireless network adaptor are also concealed within the case, and there is a connector to add an external Wi-Fi antenna should you wish to use one.

The PC software supplied was easy to install and set up; the only major gripe we had with it was the fact you can only

have one main folder for each media type (these are aptly named Photo, Music and Video). The Link Theater shares the same basic interface software as the Pinnacle ShowCenter (below) although cosmetically they are quite different. We found the Buffalo's interface was a bit more polished and generally better looking.

Playback of video and photos was impressive. DivX and XviD were smooth and played with no problems. MP3 playback was a different story, though. The first few seconds of

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+ Internal Wi-Fi antenna  
- MP3 playback issues

each track was scrambled noise, although we've been informed that new firmware is in development to correct this. Streaming DVD-quality DivX videos over Wi-Fi worked fine, but the same issue arose here as with the ShowCenter while trying to play a HD DivX file: the



wireless network simply could not cope with such a high bit rate. Using a wired network, the file played fine.

The Link Theater is very a full-featured player at a very nice price. Once the MP3 issue is resolved, you'll be hard pressed to find a better one.

## Pinnacle ShowCenter 200

This next-generation ShowCenter is considerably smaller than its predecessor, the ShowCenter 100, and packs a

few more features, like integrated 802.11g wireless networking, too.

The front panel is simple,

including only the power button, some status LEDs and a USB port. The USB port will support most flash memory-

based USB hard drives, although it did not supply enough power for a 2.5in hard disk drive. The rear panel



contains all the outputs you could ever want, with component video, digital/analog audio out, SCART, Ethernet and a Wi-Fi antenna socket all included.

The software was the most user-friendly out of the players tested; setup was quick and adding media was a breeze. You don't actually transfer the files to the player, instead you just link to them. The newly added media can be selected from the "New Media" folder or the appropriate category folder (Music, Video and so on).

Playback from the unit was great on the whole and it plays



most common media types without a problem. You can fast-forward or rewind using the traditional method (2x, 4x and so on), or you can skip by percent in 1% increments. This is a little tricky to work at first, but easy once you get used to it.

**8** Price: \$599; approx. \$25 for audio licence key Contact: Lako Pacific Phone: 1800 657 601 Web: [www.pinnaclesys.com](http://www.pinnaclesys.com) + Simple looks + Works well - Costs extra to downmix surround sound to stereo

The ShowCenter is clearly a top-notch product, but there is one annoying inconvenience with it: to output Dolby Digital or AC-3 audio through the analog outputs, you must purchase an extra licence key online for around \$25.

### TECH TERMS

**Composite video.** The standard video connector, which uses a one RCA plug. **Component video.** The default standard for connecting high-definition video equipment (including HDTV devices), component video uses three RCA-type connectors and splits the video signal into three discreet components to maintain quality. Also known as Y/Pb/Pr. **FOURCC (four-character code).** A FOURCC identifier is a sequence of four bytes used to uniquely identify data formats, including video codecs like DivX. **HDTV (high-definition TV).** A standard recently introduced to Australia through digital television. This video has a much higher resolution than DVD. A standard DVD uses a resolution of 720 by 576 pixels, while HD can be up to 1,920 by 1,080 pixels. **S-Video.** A video connection method that's higher quality than composite video output, but beneath component. It uses a four-pin DIN plug.

## KiSS DP-1500

The DP-1500 has a slim design with a black and silver case that would look right at home among high-end home theatre components. It has a built-in wired network adaptor and PC SCart slot if you wish to add Wi-Fi capabilities. These ports are installed on the back panel of the player along with SCART, S-Video, composite and digital/optical/analog audio out. In our testing, we used a SCART-to-component cable to get the best picture from the player. Through the setup menu you can choose from 480p, 720p and 1,080i output. Using 720p in PAL, we experienced some black banding across the screen while



playing videos, although switching to NTSC completely fixed this. At 1,080i there were no such problems with the PAL signal. A firmware update should fix the problem at 720p. The player's menus are easy to navigate and look pleasant while keeping things simple. The included KiSS PC-Link software is straightforward to

**7.5** Price: \$599 Contact: Qualifi Phone: (03) 8542 1111 Web: [www.kiss-technology.com](http://www.kiss-technology.com) + Progressive-scan DVD + Web radio - PAL progressive-scan quality

use. With it, you can compile all your media into a library within the player. Media playback was good, although we did get a few FOURCC errors when trying to play some video files, a problem that can be overcome by re-encoding the video. Fast-forward and rewind functioned well, although the player was a little slow to respond at times

compared to the others here. The player also features Web radio shortcuts with access to plenty of different stations that can be streamed right to your TV or stereo. The KiSS player is quite a decent unit and hopefully a few updates will iron out the bugs.

## Hauppauge MediaMVP

The MediaMVP is the smallest player we tested, at about the same dimensions as a mid-sized hardcover book. It is also the least expensive at a tiny \$289. It has a simplistic design with only a single LED in the front panel and no buttons, switches or display. The rear panel holds all five of the unit's ports including RJ-45, S-Video, composite and RCA stereo audio out.

The player's interface keeps with the simplistic design: it has a plain background with media buttons in the middle of the screen. One annoying thing

about the MediaMVP was that it would not use the whole screen, no matter how many settings we changed or what output was used. Video playback was also buggy — most videos were shifted up and left a black bar at the bottom of the screen, while others would only be played on a third of the screen. The player does not resize your videos to fit the screen; it simply plays them at the size they are encoded at. DivX and XviD playback require a suitable codec to be installed on the PC serving the media files, and even then the quality

**7** Price: \$289 Contact: New Magic Phone: (02) 9528 4555 Web: [www.hauppauge.com](http://www.hauppauge.com) + Small size + Simple design - Lacks features compared to others

isn't great. On the other hand, viewing pictures worked fine, as did music playback. You can even browse through your photos while the music is still playing. While the MediaMVP works well with music and pictures,



the trouble on the video side of things is a little disheartening. Then again, for this price you can't expect it to be perfect. Here's hoping they fix the video playback issues with a firmware update. ☹



ENTERTAINMENT ANYWHERE

# Cool and new

The PC User team tests the latest gadgets, including hot new MP3 player accessories.

## Belkin TuneCast II Mobile FM transmitter

**T**his compact FM transmitter is designed to extend the capabilities of any audio device that has a 3.5mm headphone jack. It retransmits the audio signal to an FM radio frequency, allowing you to tune in with any FM radio-capable device. You can use any channel in the normal FM radio frequency range, from 88.1MHz to 107.9MHz in

0.1MHz steps. There are also four memory presets that allow you to save frequencies. The LCD shows the current frequency being used to broadcast your audio. Belkin rates the unit to 10 hours of playback from two AAA batteries and a set is included. There is also a power lead for use in the car, but you will need one of Belkin's Mobile Power



Cords to use it with an iPod. The audio received from the TuneCast was very clear in our testing — some of the best we've heard from an FM transmitter. There was a little background noise, but it's not really noticeable once audio is present. Signal strength was good and should be ample for use anywhere within 5m to 10m of the transmitter. The TuneCast

**Price:** \$79.95 **Contact:** Belkin Phone: 1800 235 546 **Web:** www.belkin.com/au

is perfect for adding an auxiliary-in to your car stereo and, using a 3.5mm stereo plug, it's compatible with just about any MP3 player.

— Nick Mailath

## iPod Camera Connector

**Price:** \$48 **Contact:** Apple Phone: 13 36 22 **Web:** www.apple.com.au/ipod

Once in a while, a piece of technology comes along that simply *works* — just plug in and go. The iPod Camera Connector is one such device. By connecting this adaptor to your iPod at one end and your camera at the other, you can transfer the photos from your memory card onto the iPod's hard drive. About the width of a 50c coin, this connector is a great solution if you are away

from your computer and need to take images off your camera in order to take more photos. When you attach a camera to the connector with your camera's USB cable, the iPod screen will immediately display the number of photos it has detected on your camera and their total size. By clicking Import, the photos are transferred one at a time. You can conveniently choose to erase the photos off the camera's memory card once the transfer is completed. Unfortunately, you can't use the Camera Connector with just any



camera, so you'll find a list of compatible cameras on Apple's Web site. It's a shame the

Camera Connector is an optional extra. We'd like to see it built in as standard on future models.

— Roulla Yiacomini



## Klipsch ProMedia Ultra 2.0

**Price:** \$219 **Contact:** Anywhere Computer Accessories Phone: 1300 269 927 **Web:** www.klipsch.com

These Klipsch speakers may seem a little pricey for a 2.0 system (two satellites with no subwoofer), but once you hear these things go, your qualms will literally be blown away. They consist of two 2.5in drivers for the low end, and a single 1in metallised polymer tweeter to

take care of high-frequency sounds. All of these are enclosed in a tuned ported enclosure and produced excellent sound in our tests. The amplifier is built into the left speaker and supplies 15W RMS per channel. Also built into the left speaker is the line in, auxiliary in and a headphone jack, along with bass and volume controls. The cloth grilles are removable if you want to show off the metallised, fibre-composite cones, but they

look just as good with the grilles on as they do off. The bass from these speakers was exceptional for their size and specification; they filled quite a large room effortlessly. The highs were crisp and clear, adding to the overall good quality of these speakers. They're ideal for computer use, or to beef up your MP3 player's output. They're easy to set up, have a small footprint and offer great performance.

— Nick Mailath





## Creative Digital Wireless Headphone CB2530

Bluetooth wireless technology has already made a splash with mobile phones, but audio specialist Creative Labs has found a new use for it with these wireless headphones. Powered by three AAA batteries (one in the Bluetooth transmitter and two in the headphones), these aren't exactly the most stylish-looking headphones you'll ever sit on your head, but they do the job. Range is good for around 10m; as you go beyond this, the audio begins to break up as the headphones lose the Bluetooth link. Wireless headphones are not new — RF (radio frequency)

**7** Price: \$189 Contact: Creative Labs Phone: (02) 9021 9800 Web: [www.au.creative.com](http://www.au.creative.com)

headphones from Sennheiser and other brands sell for a similar price, but generally offer 10 times the range. The difference is that instead of FM analog transmission, the CB2530 uses digital audio, although we wish they used a sample rate higher than 48kHz. The audio quality was passable, but a little flat and heavy in the midrange for my liking. The



frequency response is claimed to be 20Hz to 20kHz, but they lacked crispness. The earpads themselves sit on your ears; larger enclosing surrounds

would have been more comfortable for longer listening. All up though, these aren't too bad for the price.

— Darren Yates

## Belkin Voice Recorder for iPod

The Belkin Voice Recorder plugs into the top of any standard iPod (which excludes the mini and Shuffle) and enables it to record voice memos. The quality was very good in our tests; there was no background hiss and the voice was very clear. Recording music was also surprisingly good given the comparatively small size of the microphone. Music remained clear even when the source volume was right up, and it even picked up the bass quite well. The recording can be played

back through a small speaker built into the attachment, but it is quiet. You have to hold it up to your ear to hear anything through the speaker, but if you use headphones, the volume is fine. The iPod must have version 2.1 or later software to use it and it will only work with an iPod with a dock connector. The unit is very small and doesn't add much bulk to the iPod. There is also an LED on top to indicate when it is recording. It doesn't need any batteries to run, as it uses power from the iPod it is

**8.5** Price: \$69.95 Contact: Belkin Phone: 1800 325 546 Web: [www.belkin.com/au](http://www.belkin.com/au)



connected to, which is a very nifty feature. A plastic protector is also provided in which to store the device, keeping it out of harm's way when you're not using it. All up, it's a great

accessory for your iPod, enabling you to record memos, music or anything else clearly and easily without adding unnecessary size or weight.

— Nick Mallath

## Laserpod

**8** Price: \$139 Contact: Laserpod Australia Web: [www.laserpod.com.au](http://www.laserpod.com.au)



If the lava lamp was to be revised with a more futuristic design, the Laserpod would be the likely outcome. This tech toy boasts three lasers and three high-brightness blue and purple LEDs, which are used to project various light effects onto the ceiling or the provided domed glass covers. It has two modes of operation: on the first press of

the power button, both the LEDs and the lasers turn on, projecting a blue mass dotted by the bright red lasers that are constantly changing shape and position. On the second press of the power button, the LEDs turn off and you are left with shapes and patterns generated by the lasers passing through the crystal at the centre of the lens. A rigid glass refractor lens is included and, when placed on top of the Laserpod, this changes the patterns produced into smoother, more flowing shapes. It is quite mesmerising and relaxing when projected

onto a ceiling in a dark room, but if you want to use it as more of a mood light, the two electroplated domes are more suitable. When placed on top of the main unit, these domes capture the projected light, displaying it on their surface. One downside with the Laserpod is that it really chews through the batteries; a set of three AAs will last around two evenings, although an AC adaptor is supplied. If you're after something to spice up your desk (or simply stare endlessly into), the Laserpod is for you.

— Nick Mallath



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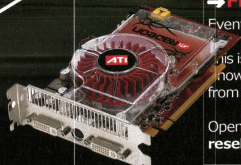
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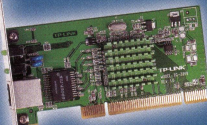
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CPU's		Motherboards		Memory		Video cards		Sound cards	
<b>intel</b>		<b>Pentium 4</b>		<b>Call for the latest prices</b>		<b>ASUS</b>		<b>CREATIVE</b>	
Celeron 2400	\$113	Gigabyte 81848PG	\$99	256M pc133	\$59	64Mb GeForce MX440 TV out AGP	\$55	Live 24 bit	\$59
Celeron 2600	\$127	Gigabyte 85661FXM	\$96	512M pc133	\$99	128Mb GeForce FX5200 TV out AGP	\$75	Audigy 2S 7.1	\$165
P4 - 3.0GHz 800	\$279	Gigabyte P4P800-MX	\$95	256M DDR 3200	\$39	256Mb GeForce FX5700LE TV out AGP	\$159	Audigy 2S Platinum	\$319
P4 - 3.2GHz 800	\$329	Gigabyte P4P800-MX	\$99	512M DDR 3200	\$65			Audigy 2 NX	\$209
<b>AMD</b>		Gigabyte 8IPE1000PI	\$153	128M DDR2 4200	\$89				
<b>Hard disks</b>		Gigabyte 85648FX75599		<b>KINGMAX</b>					
Sempron 2200	\$85	Gigabyte 8I848P775G	\$115	256M DDR 3200	\$42	Asus ATI 9250TD 256M AGP	\$109		
Sempron 2400	\$99	Gigabyte 8I915G P	\$175	512M DDR 3200	\$75	Asus 9600GT/128 128M AGP	\$329	NIC 10/100Mb	\$12
Athlon XP 2800	\$140	Gigabyte 8I915P P	\$165	1Gb DDR 3200	\$189	Asus V9400-X 128M AGP	\$72	SNC 10/100Mb	\$20
Athlon XP 3000	\$177	Gigabyte 8I915P Duo	\$173	Corsair DDR 1G Twinx	\$168	Leadtek FX5200 A340T 128M	\$69	5 port switch 10/100	\$29
Athlon 64 3000	\$224	Gigabyte 8I915P D P	\$199	Corsair DDR 1G Twinx	\$86	Leadtek FX5500 A340T 256M	\$129	8 port switch 10/100	\$39
<b>2000 RPM</b>		Gigabyte 8I915P D P	\$199	Corsair DDR 1G Twinx	\$86	Leadtek A6200TD 128M	\$189	Netgear WG9614	\$95
WD 800JB 80Gb 8m	\$90	Gigabyte 8I915P D P	\$199	Corsair DDR 1G Twinx	\$86	Leadtek PX6600TD 256M	\$199	Netgear RP614	\$81
WD 1200JB 120Gb 8m	\$120	ASUS P4P800S-X	\$109	Corsair DDR2 1G 4200S	\$175	Leadtek PX6800GT 256M	\$659	USB hub 4 port 2.0	\$29
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WD 2000JB 200Gb 8m	\$157	ASUS P4P800E delu	\$175	Kingston DDR 512 kit	\$89	ATI Radeon GeXcube 9600XT 128Mb	\$209	17" Benq G775 Fat	\$160
Maxtor 120Gb	\$110	ASUS P4P800-MX	\$88	Geil DDR 512M	\$85	ATI Radeon Sapphire 9250 128M	\$64	17" LCD Benq 71E	\$349
Maxtor 200Gb 8m	\$156	ASUS P5800	\$125	Neitbok memory	\$79	ATI Radeon Sapphire 9550 256M	\$129	17" LCD Benq 71E+	\$369
<b>Seagate</b>		ASUS P5AD2-E prem	\$447	256M DDR 2700	\$54	ATI Radeon Sapphire X300SE 128M PCIX	\$99	17" LCD Benq 7375	\$320
Barracuda 40Gb	\$79	ASUS P5SD2 Deluxe	\$285	1Gb DDR 3200	\$199			17" LCD Mitsubishi	\$369
Barracuda 80Gb	\$89	ASUS P5800-VM	\$108						
Serial ATA 80Gb 8m	\$89	Elitegroup 661FXM	\$79						
Barracuda 120Gb	\$110	<b>AMD Athlon / Duron</b>							
Barracuda 120Gb 8m	\$119	Gigabyte 7VM400AMS79							
Serial ATA 120Gb 8m	\$119	Gigabyte K8NS	\$115						
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Windows Media Center	\$189	Gigabyte K8NS-P	\$159						
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Office Pro 2003 oem	\$439	Gigabyte K8NS-P	\$159						
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52x CDROM	\$25	Gigabyte K8NS-P	\$159						
DVD 16x Liteon	\$39	Gigabyte K8NS-P	\$159						
DVD 16x Samsung	\$39	Gigabyte K8NS-P	\$159						
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256M PC3200 DDR	\$125	256M PC3200 DDR	\$125	256M PC3200 DDR	\$125	56k internal	\$20	Logitech MX518	\$20
40Gb 7200rpm HDD	\$215	40Gb 7200rpm HDD	\$215	40Gb 7200rpm HDD	\$215	Netcomm 56k internal	\$25	Logitech MX518	\$75
Panasonic FDD	\$242	Panasonic FDD	\$242	Panasonic FDD	\$242	D-Link D-824VUP+	\$245	Logitech MX1000	\$112
64Mb GeForce 4 MX	\$112	64Mb GeForce 4 MX 440	\$112	32M video built-in	\$112	D-Link DSL-G604T	\$112		
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P4 3.0G	\$950	Athlon XP3200	\$889	Pentium 4 3.0G	\$829				



# Tenor

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Model Tenor	VB2000NS	VB2000BS
Colour	Silver	Black
Net Weight	8.5 kg	
Dimension	170 x 430 x 460 mm (H*W*D)	
Cooling System	<ul style="list-style-type: none"><li>● Front (intake): 80 x 80 x 25 mm fan, 2000rpm, 19dBA</li><li>● Rear (Exhaust): Dual 60 x 60 x 25 mm silent fan, 2500rpm, 19dBA</li></ul>	
Front Accessible Internal	3 x 5.25" 2 x 3.5"	
Material	Chassis: 1.0 mm SECC. Front bezel: Aluminum made	
Expansion Slots	7	
Motherboards	ATX, Micro ATX	



Front 5.25" drive bay access



Dual USB 2.0,  
IEEE 1394 Firewire,  
Audio & Speaker ports



Non-slip foot stands



Rear Fan (Exhaust)



Front Fan (intake)

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- A6 (105 x 148mm)...\$ 6.90 TPP2846
- A4 (210 x 297mm)...\$16.90 TPP2811

# TONNY



## Canon Ink Cartridges



TONNY

9

Rated 9 out of 10 by PC User

Model	Genuine	TONNY
BCI-24BK	\$14.00	\$5.60
BCI-24C	\$33.00	\$7.20



Model	Genuine	TONNY
BX-3	\$49.00	\$28.00
BCI-01	\$39.00	---
BCI-02	\$39.00	\$28.00
BCI-03	\$38.00	\$28.00
BCI-05	\$50.00	\$35.00
BCI-20	\$49.00	\$28.00
BCI-3eBK	\$25.00	\$ 8.80
BCI-3eC	\$19.00	\$ 6.40
BCI-3eM	\$19.00	\$ 6.40

Model	Genuine	TONNY
BCI-3eY	\$19.00	\$6.40
BCI-3PC	\$19.00	\$6.40
BCI-3PM	\$19.00	\$6.40
BCI-6BK	\$24.00	\$6.40
BCI-6C	\$24.00	\$6.40
BCI-6M	\$24.00	\$6.40
BCI-6Y	\$24.00	\$6.40
BCI-6PC	\$24.00	\$6.40
BCI-6PM	\$24.00	\$6.40

Model	Genuine	TONNY
BCI-15BK	\$24.00	\$6.40
BCI-15C	\$44.00	\$7.20
BCI-21BK	\$13.00	\$4.90
BCI-21C	\$28.00	\$6.40

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from  
\$490



## Epson Ink Cartridges



Model	TONNY
T007	\$10.80
T008	\$16.50
T009	\$16.90
T013	\$ 5.60
T014	\$ 9.90
T017	\$10.80
T018	\$13.20
T026	\$11.20

Model	TONNY
T027	\$16.50
T028	\$11.20
T029	\$13.75
T038	\$11.00
T039	\$13.70
T0321	\$10.80
T0322	\$9.50
T0323	\$9.50

Model	TONNY
T0324	\$9.50
T0422C	\$9.50
T0423M	\$9.50
T0424Y	\$9.50
T0461	\$8.90
T0472	\$8.90
T0473	\$8.90
T0474	\$8.90

Model	TONNY
T0491	\$8.90
T0492	\$8.90
T0493	\$8.90
T0494	\$8.90
T0495	\$8.90
T0496	\$8.90
S020089	\$9.90
S020093	\$5.60

Model	TONNY
S020097	\$12.90
S020108	\$ 6.50
S020110	\$11.50
S020187	\$ 5.60
S020189	\$ 6.50
S020191	\$ 9.90
S020193	\$11.50

## HP Ink Cartridges

Model	Genuine	TONNY
51625A (#25)	\$46.00	\$30.00
51626A (#26)	\$46.00	\$30.00
51629A (#29)	\$46.00	\$30.00
51645A (#45)	\$46.00	\$26.00
51649A (#49)	\$46.00	\$30.00
81823D (#23)	\$51.00	\$32.00
C6578D (#78)	\$51.00	\$32.00
C6614A (#20)	\$44.00	\$28.00
C6615DA (#15)	\$44.00	\$26.00
C6625A (#17)	\$48.00	\$30.00
C6656AA (#56)	\$32.00	\$24.00

Model	Genuine	TONNY
C6657AA (#57)	\$51.00	\$32.00
C6658AA (#58)	\$26.00	\$26.00
C8727A (#27)	\$24.00	\$24.00
C8728AA (#28)	\$26.00	\$26.00



## Lexmark Ink Cartridges

Model	Genuine	TONNY
12A1970	\$48.00	\$32.00
12A1980	\$56.00	\$35.00
17G0050	\$46.00	\$32.00
17G0060	\$53.00	\$35.00
13400HC	\$53.00	---
13619HC	\$52.00	---
10N0217	\$33.00	---
10N0227	\$35.00	---
10N0016	\$46.00	---
10N0026	\$49.00	---



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## Brother Ink Cartridges

Model	Genuine	TONNY
LC-21BK	\$30.00	\$9.50
LC-21C/M/Y	\$17.00	\$8.90
LC-02BK	\$21.00	\$9.50
LC-02C/M/Y	\$11.00	\$8.90

Model	Genuine	TONNY
LC-04BK	\$28.00	\$9.50
LC-04C/M/Y	\$16.00	\$8.90
LC-800BK	\$32.00	\$9.50
LC-800C/M/Y	\$18.50	\$8.90

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## NEW ARRIVALS!

<b>Ink Cartridge</b>	<b>TONNY</b>
Canon BCI 6G	\$6.40
Canon BCI 6R	\$6.40

<b>Ink Cartridge</b>	<b>TONNY</b>
Epson T0540/2/3/4	\$8.90
Epson T0544/7/8/9	\$8.90
Epson T0561/2/3/4	\$8.90

<b>Ink Cartridge</b>	<b>TONNY</b>
HP C8658AA	\$26.00
HP C8727A	\$24.00
HP C8728A	\$26.00

<b>Ink Cartridge</b>	<b>Genuine TONNY</b>	<b>Toner Cartridge</b>
Brother LC478K	\$32.00	HP Q5949A
Brother LC47C/M/Y	\$18.50	\$65.00

## HP Black Toner Cartridges

Model	Genuine	TONNY	Model	Genuine	TONNY
92274A	\$135.00	\$ 59.00	C4129X	\$229.00	\$115.00
92298A	\$139.00	\$ 65.00	C4182X	\$259.00	\$135.00
C3906A	\$ 99.00	\$ 59.00	C7115A	\$ 89.00	\$ 59.00
C3903A	\$125.00	\$ 75.00	C8061X	\$185.00	\$ 85.00
C3909A	\$220.00	\$115.00	Q1338A	\$209.00	\$ 85.00
C4092A	\$ 99.00	\$ 59.00	Q2612A	\$ 99.00	\$ 59.00
C4096A	\$135.00	\$ 65.00	Q2613A	\$ 99.00	\$ 59.00
C4127A	\$145.00	\$ 65.00	Q2610A	\$169.00	\$ 95.00
C4127X	\$169.00	\$ 80.00	Q2624A	\$ 96.00	\$ 59.00

## HP Colour Toner Cartridges

Printer Model	Model	Genuine	TONNY
LJ1500/2500	C9700A (BK)	\$115.00	\$ 79.00
	C9701/2/3A (CMY)	\$135.00	\$105.00
LJ4600	C9720A (BK)	\$199.00	\$155.00
	C9721/2/3A (CMY)	\$262.00	\$185.00
LJ4500	C4191A (BK)	\$119.00	\$ 65.00
	C4192/3/4A (CMY)	\$165.00	\$ 85.00
LJ8000	C4149A (BK)	\$150.00	\$ 89.00
	C4150/1/2A (CMY)	\$225.00	\$155.00

## Lexmark Toner Cartridges

Model	Genuine	TONNY
Optra E210	\$129.00	\$85.00
Optra E310	\$225.00	\$98.00
Optra E/E+	\$135.00	\$59.00

**Toner powder  
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for HP and  
Samsung**

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## Brother Toner Cartridges

Model	Genuine	TONNY
TN-100	\$ 29.00	\$23.00
TN-200	\$ 42.00	\$23.00
TN-300	\$ 42.00	\$23.00
TN-8000	\$ 43.00	\$23.00
TN-6600	\$ 99.00	\$65.00
TN-7600	\$125.00	\$65.00



## Canon Toner Cartridges

Model	Genuine	TONNY
EP-22	\$ 99.00	\$59.00
EP-25	\$ 99.00	\$59.00
EP-26	\$109.00	\$69.00
EP-32	\$145.00	\$65.00
EP-52	\$185.00	\$80.00
E31	\$189.00	\$95.00
FX3	\$132.00	\$59.00



## Samsung Toner Cartridges

Model	Genuine	Refill
ML-1210D3	\$ 94.00	\$49.00
ML-1710D3	\$ 98.00	\$49.00
ML-4500D3	\$ 97.00	\$49.00
ML-5200D6	\$163.00	\$65.00
ML-6006D6	\$155.00	\$65.00
SCX-4216D3	\$ 99.00	\$49.00
SF-5100D3	\$ 95.00	\$49.00



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Optical engine  
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22-in-1 Card Reader/Writer  
+3-port USB 2.0 Hub Combo



Silver Blue Pink Black Gold

## HC2002

22-in-1 Card Reader/Writer  
+3-port USB 2.0 Hub Combo  
(with illumination mirror)



Silver Blue Pink Black White

## HC2003

22-in-1 Card Reader/Writer  
+3-port USB 2.0 Hub Combo  
(with illumination mirror)



Silver Blue Pink Black White

## CR2012

22-in-1 Card Reader/Writer  
(with illumination mirror)



Silver Lock

## CR2015

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## CR2013

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Silver Blue Pink Black White

## CR204001

22-in-1 Card Reader/Writer



Silver Blue Pink Black Gold

## CR204002

22-in-1 Card Reader/Writer  
with Media Case



Silver Blue Pink Black Gold

## CR204005

22-in-1 Card Reader/Writer



Black Silver

## CR202005

6 in 1 Card Reader/Writer



White Black Orange

## U 2 HUB

USB 2.0 4 Port Hub



Silver

## HU204001

USB 2.0 4 Port Hub



Silver Blue Pink Black Gold

## HU2006

USB 2.0 4 Port Hub



Silver Blue Pink Black Gold

## HU2007

USB 2.0 4 Port Hub  
(with illumination mirror)



White

## CB0002

Media Case



Silver Blue Orange White

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This mini bar bones PC can operate on 12v or 240v making it ideal for use in boats or cars. A fanless design ensures silent operation.  
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### IDE RAID Controller

Attach up to four IDE drives in RAID, works with HD and CD/DVD.  
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### Digital I/O Card

A PCI card that provides 48 digital I/O lines and three 16bit counters with a maximum count rate of 10MHz.  
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### Analog Telephone Adaptor

Interconnect a normal PSTN phone line and the Skype network for use with a standard telephone.  
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### Car PC

Designed specifically for automotive use, this car computer has a small PC case, integrated 10.4" LCD touch screen and runs on 12 Volts. It includes a 1 GHz CPU, 256MB DDR RAM and a 20GB slim anti-vibration hard drive. Optional extras include a high precision GPS engine, a high precision GPS Active Antenna and a magnetic card reader.  
Cat. 1162-9 \$2990



### Firewire B Card

Firewire B is a new Firewire standard that is twice as fast as the original Firewire A. The card has two external B ports, and two legacy A ports, one internal and one external. Compatible with 32 and 64 bit PCI BUS.  
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### Dual ADSL Router

Enhance reliability and double your ADSL capacity by using two different ISP's.  
Cat. 10145-9 \$269



### VGA Splitter 2 WAY

The ideal way of providing multiple duplicate displays in training rooms, stock rooms, clubs, etc. Also available in 4 and 8 way.  
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### Low Profile Printer Cards

Replace a faulty printer port or add more ports to a PC in a low profile case. Standard size cards available.  
Cat. 2840-9 Single \$94  
Cat. 2841-9 Dual \$123



### High Power Bluetooth Dongle

A high power Bluetooth dongle with a nominal range of 100m. Compliant with Bluetooth v1.1.  
Cat. 11903-9 \$89



### USB to Parallel

Allows the user to plug an older parallel printer into a USB port.  
Cat. 2697-9 \$39



### USB to Serial

Plugs into a USB port and can provide multiple serial ports.  
Cat. 2828-9 One port \$54  
Cat. 2832-9 Two port \$119  
Cat. 2831-9 Four port \$349



### Digital & Analogue TV Tuner

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Cat. 11655-9 4 Way \$129  
Cat. 11656-9 8 Way \$449  
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### Sharp Cash Register

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Cat. 1008129-9 \$289



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### Windows Based Terminal

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### Wireless Hotspot

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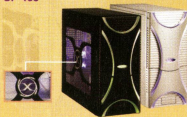
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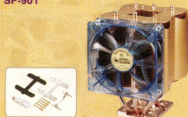
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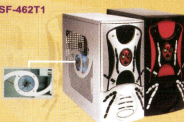
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Model	TX635	TX640B	TX1050B	TX1088AMG
Case Type	Mini Tower	Mini Tower	SOHO File Server	SOHO File Server
Case Colour	Beige	Black	Black	Antec Metallic Grey
Case Dimensions	43.8 (H) x 20.5 (W) x 47.2 (D) cm	43.8 (H) x 20.5 (W) x 47.2 (D) cm	52.3 (H) x 20.6 (W) x 47.2 (D) cm	52.3 (H) x 20.6 (W) x 47.2 (D) cm
Power Supply	Smart Power 2.0 350 W ATX12V v2.01	Smart Power 2.0 400 W ATX12V v2.01	Smart Power 2.0 500 W ATX12V v2.01	True Power 2.0 480 W ATX12V v2.01
Drive Bays	8	8	10	10
Cooling Capacity				
- Rear	1 x 120mm TriCool (standard)	1 x 120mm TriCool (standard)	1 x 120mm TriCool (standard)	1 x 120mm TriCool (standard)
- Front	1 x 80mm (Optional) Front	1 x 80mm (Optional) Front	1 x 80mm (Optional) Front	1 x 80mm (Optional) Front
- Chassis	1 x 92mm (Optional) CPU Duet 1 x 80mm (Optional) VGA	1 x 92mm (Optional) CPU Duet 1 x 80mm (Optional) VGA	1 x 80mm (Optional) HDD 1 x 92mm (Optional) CPU Duet 1 x 80mm (Optional) VGA	1 x 80mm (Optional) HDD 1 x 92mm (Optional) CPU Duet 1 x 80mm (Optional) VGA

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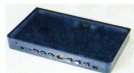


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OEM **\$95**

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- Powerful Channel Editing
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- Works on MCE2005 &
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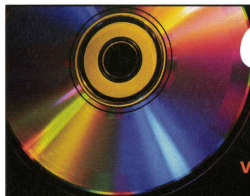


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See Page 37

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See Page 44

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See Page 26

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WebCode: MAX0071



### D-Link 54Mbps Wireless Travel Router (DWL-G730AP)

The D-Link AirPlusG DWL-G730AP is a portable and convenient wireless solution for the traveling business person delivering 802.11g wireless connectivity with a maximum wireless signal rate of up to 54Mbps. Use it in conference rooms, hotel rooms, or even at hotspots. The DWL-G730AP can be used as an access point, router or wireless client.

See Page 13

**Our Price** **\$142** **Save** **\$38**  
WebCode: DLK9240

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## IN THIS EDITION

**Stay In Touch On The Road .....2**  
With the Vodafone Blackberry devices.

**Music On The Move .....21**  
The Sandisk Sansa Mp3 player has arrived!

**Make Free Calls Pc To Pc .....22**  
Hot new Voip phone solution from Comsol.

**Mind Your Own Business! .....40**  
MYOB has a range of financial and accounting software to get you back on track!

**Convert to PDF! .....45**  
Scansoft's new PDF create and convert range will have you putting out professional PDF documents in no time!

**Mac Attack! .....47**  
Get the hottest and latest Mac products from City Software!





The World's Largest Mobile Community

## Vodafone \$199 Business Cap

**Pay \$199 a month and get \$700 worth of standard calls, TXT & voicemail shared across 2-4 mobiles\***

- :: Stay in control of your business mobile costs
- :: 10c per 5 minute calls within your TEAM and back to the office
- :: More than four mobiles? We have a range of Caps for you to upgrade to, depending on your business needs
- :: Change your Cap up or down each month - you decide what meets your business needs
- :: No lock-in contract

\*Available to credit approved applicants only. Additional charges apply for excluded services and usage exceeding the usage cap. All unused cap value is forfeited at the end of the monthly billing period.

**Please call our Managed Accounts team on 1300 761 761 for queries on Vodafone products and prices.**



### BLACKBERRY 7100vi

Send and receive emails, access the internet and your office network, while doing business on the move.

- :: Emails sent to the palm of your hand
- :: Works as a mobile and PDA
- :: Unique user-friendly menu
- :: Lightweight and pocket sized
- :: \$1 per day for up to 500 emails/ 1MB per month on Mobile Email 30\*\*

\*\*On Mobile Email 30 if you go over your limit of 500 emails (or 1MB of data) in a month, you will be upgraded to the Mobile Email 50 Bundle and will be charged an additional \$25 for the rest of the month

**\$711**

**Save \$88**

WebCode: V007102



### VODAFONE MOBILE CONNECT

Vodafone Mobile Connect is the quick, secure way to access email and internet via your laptop, via the Vodafone GPRS network.

- :: Access your office on the move
- :: Takes as little as 5 minutes to set up
- :: Fast, secure connection
- :: No cords, no cables, no plugs
- :: Get unlimited internet access for just \$49.95 per month\*\*\*

\*\*\*For credit approved applicants. Fair use policy applies and may affect usage over 500MB a month

Outright  
**\$231**

**Save \$68**

WebCode: V007271

## Index of Hardware Manufacturers

Accead.....14	Dvico.....20	Konica Minolta.....16, 29	Panasonic.....9	Symbol.....10
AI Tech.....25	Dymo.....20	Lacie.....27	Phillips.....8	Tandberg.....5
Aten.....15	Epson.....11, 15, 17, 18, 19, 29	Lexar.....29	Pinnacle.....20	Telstra.....12
Avision.....14	Fuji Xerox.....16	Lexmark.....17, 18, 29	Pioneer.....27	Termaltake.....24
Belkin.....23	Hauppauge.....20	Linksys.....14	Plantronics.....16, 24	Toshiba.....6
Canon.....9, 15, 18, 19, 29	Hit Video Lab.....29	Logitech.....13, 21, 29	Posiflex.....6	Viewmaster.....2
Canopus.....20	Hot Drive.....28	Maxtor.....26	PSC.....11	Vodafone.....2
Century CD.....4	HP.....4, 7, 8, 15, 17, 18, 23, 28	MGE.....5	Samsung.....21	Wacom.....15
Certance.....5	IBM.....4	Microsoft.....21	Sandisk.....8	Wasp.....10, 11
Cleansafe.....8	Imation.....4, 27	Netcomm.....16	Sennheiser.....28	Xp Sound.....28
Compaq.....25	Image.....27	Netgear.....15	Sitecom.....25	Zebra.....10
Comsol.....19, 22	i-Rocks.....24	O2.....9	Snap.....5	
Connectland.....13	Kensington.....4	Olympus.....9	SonicWall.....5	
D-Link.....12, 13	Kodak.....9, 18	PalmOne.....8	Sony.....9, 23	

## Index of Software Manufacturers

Books.....30, 33, 41	Computer Associates.....44	Getbusi.....42	MYOB.....40	Scansoft.....45
Acti.....42, 45	Corel.....31	Jasc.....31	Nero.....44	Sony.....46
Adobe.....32, 33	Crystal.....42	Macromedia.....34	Norton.....43, 47, 48	Symantec.....43, 47, 48
Apple.....47	Dantz.....42	MAC Products.....47	Pinnacle.....46	Total Training.....33
Autodesk.....35	Extensis.....47	MAJUS.....44	Quark.....34	Ulead.....46
Borland.....42	Filemaker.....41	MoneyWorks.....41	Quicken.....38, 39	Vet.....44
Centennial Media.....34, 41	Games.....37	Microsoft.....36, 37, 47	Roxio.....44	

## Dedicated Account Management



City Software has a dedicated and committed team for corporate accounts, offering specialised and professional assistance for our clients. Our goal is to provide value to your business by supplying the right software and hardware at the right price at the right time.

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## Century CD/DVD 100 Disk Storage

The safe and convenient way to store and retrieve your important data and entertainment. Provides 100 disc capacity per CDD unit.

**Price to clear!**



**Our Price \$69** **Save \$30**  
WebCode: GDS0001

## Kensington Security Notebook ComboSaver

- No keys to lose - one piece design is easy to use.
- Attaches to the built-in Kensington security slot found on 95% of all notebook computers.
- Strong, six-foot cable is an effective physical and visual deterrent to theft.
- Cable securely anchors computer to any immovable object.



**Our Price \$60** **Save \$42**  
WebCode: KEND030

## Imation Disc Stakka

The Imation Disc Stakka is an automated carousel that gives you a simple and efficient way to manage and protect your disc library. Each unit stores and protects up to 100 data CDs, DVDs, music or game discs and links to your computer via a USB connection. The bundled OpTracker software enables you to search its database of stored discs by title, keyword, directory or file name to find and eject any disc within seconds.



**Our Price \$171** **Save \$28**  
WebCode: MMM1214

## HP ProLiant ML350 G4 Server + Microsoft Small Business Standard Bundle

Outstanding performance, affordable price

Value is a hallmark of ProLiant servers, and the ProLiant ML350 server is no exception. It combines the latest Intel processors with high-performance I/O and memory technology at a price that fits smaller budgets.

### Simplified management, from setup to updates

The ProLiant ML350 server is designed for simplified access and easy management. HP ProLiant Essentials software, including SmartStart, is shipped with your server, so you can be up and running quickly. For ongoing management, HP Systems Insight Manager monitors and alerts on server status, so staff can focus on priority projects. And with the Lights Out technology of HP Remote Insight Lights-Out Edition II (RiLOE II), you can view the server console and install updates anytime, anywhere—even when the lights are down.

### Windows Small Business Server 2003 Standard Edition

Includes Windows Server 2003 and Exchange Server 2003 technology. Get the capabilities of a security-enhanced small-business network with storage, printing, collaboration, e-mail, Internet connectivity, support for mobile workers, and faxing.

Series:	ProLiant ML350
Manufacturer #:	356003-011
Processor:	Xeon 3.2GHz Upgradable to 2 Processors
Memory (Ram):	512MB PC2700 DDR
Cache memory:	Integrated 1MB Level 2 cache
Hard Drive:	2 x 72GB 10,000 RPM SCSI
HDD Controller:	Dual Channel Ultra320 SCSI Adapter
Optical Storage:	48X IDE CD-ROM Drive
Ethernet:	NC7761 PCI Gigabit NIC
Ports:	1 x Parallel, 1 x Serial, 1 x Pointing Device, 1 x VGA, 1 x Kbrd, 1 x RJ-45, 3 x USB Ports
Slot Totals:	1 x 133MHz PCI-X, 2 x 100MHz PCI-X, 1 x 66MHz PCI-X, 1 x PCI-E X8, 1 x PCI-E X4)
Form Factor:	Tower or 5U rack
Warranty:	3 Years Limited Warranty (3 Years Parts, 3 Years Labour & 3 Years On-Site); Global Warranty

**Our Price \$4892** **Save \$103**  
WebCode: COB4223



## HP Desktops

Series:	DX6120 Slim Tower
Manufacturer #:	PV030PA
Processor:	Intel Celeron 2.66 GHz
Memory (Ram):	512MB PC3200 DDR2
Video Card:	Intel Graphics Media Accelerator 900
Hard Drive:	80GB 7200rpm
Optical Storage:	DVD Combo
Ethernet:	Integrated Broadcom NetXtreme Gigabit
Operating System:	Microsoft Windows XP Professional
Keyboard:	2004 Standard Keyboard
Mouse:	2-Button Scroll Mouse
Warranty:	3yr parts, 1yr labour, 1yr onsite

**Our Price \$899** **Save \$50**  
WebCode: COD1041

HP DX 6100 MT model displayed

HP DX 2000 MT model displayed



Series:	DX6120 Slim Tower	DX6120 Microtower
Manufacturer #:	PV028PA	PV027PA
Processor:	Intel Celeron 2.66 GHz	Intel Pentium 4 Processor 520 2.8GHz
Memory (Ram):	512MB PC3200 DDR2	512MB PC3200 DDR2
Video Card:	Intel Graphics Media Accelerator 900	Intel Graphics Media Accelerator 900
Hard Drive:	160GB 7200rpm	80GB 7200rpm
Optical Storage:	CDRW	DVD Combo
Ethernet:	Integrated Broadcom NetXtreme Gigabit	Integrated Broadcom NetXtreme Gigabit
Operating System:	Microsoft Windows XP Professional	Microsoft Windows XP Professional
Keyboard:	2004 Standard Keyboard	2004 Standard Keyboard
Mouse:	2-Button Scroll Mouse	2-Button Scroll Mouse
Warranty:	3yr parts, 1yr labour, 1yr onsite	3yr parts, 1yr labour, 1yr onsite

**Our Price \$899** **Save \$50**  
WebCode: COD1037

**Our Price \$1099** **Save \$50**  
WebCode: COD1042

**Our Price \$1195** **Save \$50**  
WebCode: COD1038



## Certance DDS-5 External Tape Drive

Certance's DDS5 technology provides reliable and affordable tape data protection for the small and medium businesses.

- Up to 72GB Capacity on a single cartridge
- Includes Yosemite TapeWare XE Backup Software (Windows, Linux & Netware)
- Up to 25.2GB/hr
- 3 Year Warranty



Our Price **\$1321** Save **\$78**

WebCode CER0006

## Certance LTO 2 External Tape Drive

Certance's LTO 2 tape drives balance price with capacity/performance a perfect match for the medium-to-large businesses.

- Capacity up to 400GB per cartridge
- Enterprise class performance up to 245GB/hr
- Full backward compatibility with LTO1 tape drives from all manufacturers



Our Price **\$4520** Save **\$117**

WebCode CER0020

## Certance LTO 3 External Tape Drive

Certance's LTO 3 solution provides the largest capacity of any LTO technology to date, at the lowest price points.

- Up to 800GB capacity on a single cartridge
- Up to 490GB/hr
- Backward compatible with LTO 2 and LTO 1 media
- 3 Years Warranty



Our Price **\$8020** Save **\$201**

WebCode CER0062

## Snap Appliance 2200

Add a whisper-silent file server with RAID for a fraction of the cost of a traditional file server.

- 500GB, Simple, award-winning user interface for ease of management
- RAID 1 (mirroring), 0 (striping) or JBOD (Just a Bunch Of Disks)
- 100Base-TX/10Base-T Ethernet connectivity



Our Price **\$2450** Save **\$110**

WebCode SNA0030

## Snap Appliance 4200

High-end features and an attractive price point drive down the cost of workgroup storage in your enterprise. No other storage server offers so much for so little.

- 2.0 GHz Intel processor
- Up to 3GB of Double Data Rate (DDR) memory
- Dual Gigabit Ethernet ports
- Integrated Computer Associates eTrust antivirus software
- Backup agent support for CA, VERITAS and Legato



Our Price **\$5153** Save **\$302**

WebCode SNA1000

## Snap Appliance 4500

Industry-leading performance and capacity for departmental storage for your enterprise.

- No other 1U storage server matches its performance, capacity and feature set.
- Ideal for: File sharing, near-line storage, on-line backup, remote office server
- Every Snap Server 4500 can support up to two Snap Disk 10 expansion arrays for easy to manage, best-in-class storage expansion
- 1 Terabyte storage



Our Price **\$9588** Save **\$112**

WebCode SNA0090

## Tandberg SDLT320 External Drive Kit

The SDLT 320 presents a major advance in capacity and performance over the very popular DLTR8000.

- 320GB\* of Compressed Capacity
- Kit includes: 1 SDLT Media, SCSI Cable & Terminator and Power Cord
- 3 Years Advanced Replacement Warranty\*



Our Price **\$4275** Save **\$170**

WebCode TAN0020

## Tandberg 420 LTO 2 Internal Drive

The world's most compact LTO2 drive with unrivalled performance. New Half Height Internal LTO2 bare drive. LTO2 capacity at LTO1 prices!

- Up to 400GB\* Capacity
- Space saving half height design
- Up to 173GB\*/hr performance
- 3 Years Advanced Replacement Warranty



\*Offer valid until end of August 2005

Our Price **\$2928** Save **\$48**

WebCode TAN0003

## Tandberg 420 LTO 2 External Kit

NEW Half Height External LTO2 drive kit. Industry leading performance at an affordable price.

- Up to 400GB\* Capacity
- Revolutionary half height design
- Includes SCSI Cable and Terminator
- 3 Years Advanced Replacement Warranty



\*Offer valid until end of August 2005

Our Price **\$3278** Save **\$53**

WebCode TAN0004

## Tandberg LTO 2 HH StorageLoader

NEW StorageLoader LTO2 Half Height offers capacity and performance as well as advanced data management features in a compact low profile 1U form factor.

- 8 Slots, up to 3.2TB\* capacity
- 1U Form factor
- Includes: Rack mount kit, SCSI Cable & Terminator and Power Cord
- 3 Years Advanced Replacement Warranty\*



Our Price **\$6988** Save **\$1462**

WebCode TAN0005

## Tandberg M1500 LTO 2 Tape Library

Modular & Stackable Data Protection. Enterprise class automated tape library with expandability and upgradeability.

- 25 Slots Capacity (up to 10TB\*)
- Single or Dual Drive Configuration
- LVD SCSI Connection (optional FQ)
- Barcode Reader
- 3 Years Advanced Replacement Warranty\*



Our Price **\$14,500** Save **\$500**

WebCode TAN0006

## Tandberg Viking FS-400 NAS

\*NEW\* 1TB NAS appliance, perfection addition for department storage and enterprise. Ideal for file sharing, near-line storage, disk to disk backup and remote office server.

- Microsoft OS
- 4HDD with 1TB Capacity
- Rack mount kit
- RAID 1 and 5
- 3 Years Advanced Replacement Warranty\*



Our Price **\$6242** Save **\$103**

WebCode TAN0007

## MGE NOVA 600VA UPS

Most cost effective Line Interactive UPS available on the market today. A perfect mate for protection of personal and professional PC.

- Automatic Voltage Correction
- Wide Tolerance to fluctuations (160V to 290V)
- Telephone/Fax/Modem Line Filtering
- USB Comm Port & Management sw
- 2 Years Warranty



Our Price **\$112** Save **\$8**

WebCode MGE0031

## MGE Evolution 1500VA Rack UPS

High Density, True Sinewave Power Protection for server, storage and networking equipment.

- 1U Design, Rack Mount included
- USB & Serial Communication
- Automatic Voltage Regulation
- Management SW for PC and MAC
- 2 Years Warranty



Our Price **\$1040** Save **\$139**

WebCode MGE0053

## SonicWALL TZ150 Firewall/Switch

Low cost, easy-to-use layered protection for small/medium businesses.

- Secure remote VPN Access
- Deep Packet Inspection
- (5) 10/100 Ethernet (WAN, 4 port LAN Switch)
- Supports up to 10 nodes
- Supports DES, 3DES, AES



Our Price **\$506** Save **\$186**

WebCode SWL0303

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Duo S450P model displayed

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Viewmaster 17"  
Silver/Black LCD  
Monitor with  
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MLV5575BK

(Available in Beige)

- View Angle (H)=75° (V)=75°-60° (CR)=10
- Contrast Ratio 450:1
- Brightness 260cd/m2
- Response Time 16ms
- Resolution 1280 x 1024



**Our Price \$355** **Save \$74**  
WebCode: HAL0020

Viewmaster 19"  
Silver/Black LCD  
Monitor

MLV995BK

(Available in Beige)

- View Angle (H)=85° (V)=85° (CR)=10
- Contrast Ratio 500:1
- Brightness 250cd/m2
- Response Time 25ms
- Resolution 1280x 1024



**Our Price \$517** **Save \$54**  
WebCode: HAL0021

Viewmaster Advantage BTX EVO System  
The all new whisper quiet system

Silver &amp; Black BTX minitower with front USB2.0/Audio/Firewire

Series: Mini Tower  
Processor: Intel Pentium 4 3.0Ghz  
Memory (Ram): 256MB, PC-3200 DDR 400MHz  
Video Card: Integrated  
Hard Drive: 80G  
Optical Storage: DVD Writer, 1.44 Floppy  
Ethernet: 10/100/1000  
Operating System: Microsoft Windows XP Pro  
Keyboard/Mouse: Viewmaster Multimedia P52  
Card Reader: 11 in 1 card reader  
Warranty: 3 year Onsite Warranty

**Our Price \$1255** **Save \$144**  
WebCode: OME0005

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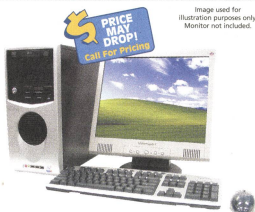


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Monitor not included.

Series:	SOHO - Mid Tower	Business - Slim Line	Performance - Mid Tower
Processor:	AMD Athlon™ 64 Processor 3000+	AMD Athlon™ 64 Processor 3000+	AMD Athlon™ 64 Processor 3000+
Memory (Ram):	512MB PC-3200 DDR 400MHz	512MB PC-3200 DDR 400MHz	512MB PC-3200 DDR 400MHz
Video Card:	Integrated	Integrated	Geforce 6200 128 DVI Out
Hard Drive:	80GB 7200RPM SATA	80GB 7200RPM SATA	80GB 7200RPM SATA
Optical Storage:	16X DVD Combo, 1.44MB Floppy	16X DVD Combo, 1.44MB Floppy	16X DVD Writer, 1.44MB Floppy
Ethernet:	10/100Mb LAN	10/100Mb LAN	10/100/1000Mb LAN
Operating System:	MS Windows XP Home	MS Windows XP Professional	MS Windows XP Professional
Keyboard/Mouse:	Viewmaster Multimedia P52	Viewmaster Multimedia P52	Viewmaster Multimedia P52
Card Reader:	11 in 1 card reader	Optional	11 in 1 card reader
Warranty:	3 year Onsite Warranty	3 year Onsite Warranty	3 year Onsite Warranty
AMD 64 Athlon	<b>Our Price \$999</b> <b>Save \$96</b> WebCode: HAL0029	<b>Our Price \$1075</b> <b>Save \$124</b> WebCode: HAL0030	<b>Our Price \$1420</b> <b>Save \$79</b> WebCode: HAL0031

## Viewmaster Portiva 5271v

Processor: Intel® Pentium® M Processor 730 1.6Ghz  
Memory (Ram): 512MB Dual Channel PC-4200 DDR2-533  
Graphics Card: nVIDIA GeForce Go 6600 GPU  
Wireless LAN: Intel® Pro Wireless 2200BG  
Hard Drive: 40GB  
Optical Storage: DVD Dual Writer  
Display: 15.4" TFT LCD widescreen WXGA 1280x800  
Modem/Ethernet: 56K V.92 Modem, 10/100/1000Mb LAN  
Pointing Device: Touchpad  
Interface: 5 x USB 2.0, 1 x Firewire IEEE 1394b  
Operating System: Microsoft Windows XP Home  
Warranty: 3 year on site warranty

**Our Price \$2300** **Save \$495**  
WebCode: HAL0032

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Series:	Portiva 5223	Portiva 5P53	Portiva 5510
Processor:	Intel® Pentium® M Processor 725 1.6Ghz	Intel Celeron M 1.3Ghz Processor	Intel® Pentium® M Processor 725 1.6Ghz
Memory (Ram):	512MB PC-2700 DDR333	256MB PC2700 DDR RAM	512MB PC-2700 DDR333
Graphics Card:	Intel® Extreme Graphics	VIA Shared Memory Video	Intel® Extreme Graphics
Wireless LAN:	Intel® Pro Wireless 2200BG	802.11G Wireless	Intel® Pro Wireless 2200BG
Hard Drive:	40GB	30GB	40GB
Optical Storage:	DVD Dual Writer	CDRW/DVD Combo Drive	DVD Dual Writer
Display:	12.1" TFT LCD widescreen WXGA 1280x800	15" XGA TFT LCD - 1024x768	15" TFT LCD XGA 1024x768
Modem/Ethernet:	56K V.92 Modem, 10/100Mb LAN	56K V.92 10/100 LAN	56K V.92 Modem, 10/100Mb LAN
Pointing Device:	Touchpad	Intelligence Glide Pad with 2 buttons	Touchpad
Interface:	2 x USB 2.0, 1 x Firewire IEEE 1394a	4 x USB 2.0, VGA, S-Video, PCMCIA, Line Out	3 x USB 2.0, 1 x Firewire IEEE 1394a
Operating System:	Microsoft Windows XP Home	Microsoft Windows XP Home	Microsoft Windows XP Home
Warranty:	3 Year on site warranty	3 year onsite warranty (upgrade options available)	3 Year on site warranty
Our Price \$1455	Save \$244	Our Price \$1975	Save \$224
WebCode: VIE0012	WebCode: OME0006	WebCode: VIE0020	WebCode: VIE0020



## HP Notebooks

Series: NX6120  
Manufacturer #: PV131PA  
Processor: Intel Celeron M Processor 360 1.4GHz  
Memory (Ram): 256MB 333MHz DDR  
Video Card: Intel® Graphics Media Accelerator 900  
Hard Drive: 40GB 5400rpm  
Optical Storage: DVD/CD-RW Combo  
Display: 15" TFT XGA  
Modem/Ethernet: High speed 56K modem, 10/100/1000 NIC  
Pointing Device: Touchpad With Scroll Zone  
Operating System: Microsoft Windows XP Professional  
Weight: 2.75kg  
Warranty: 1 Year

HP NC6220 notebook displayed



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HP nx6120 notebook displayed

**Our Price \$1365** **Save \$30**

WebCode: HCN0008

Series:	NX6120	NC8000	NC6220
Manufacturer #:	PV134PA	PQ148PA	PV139PA
Processor:	Intel Pentium M Processor 730 1.6GHz	Intel® Pentium® M Processor 1.6GHz	Intel Pentium M Processor 740 1.73GHz
Memory (Ram):	512MB 333MHz DDR	256MB 333MHz DDR	512MB 400MHz DDR
Video Card:	Intel® Graphics Media Accelerator 900	ATI Mobility Radeon 9600 Pro	Intel® Graphics Media Accelerator 900
Hard Drive:	60GB 5400rpm	40GB 5400rpm	40GB 5400rpm
Optical Storage:	DVD±RW±R	8X DVD-ROM	DVD/CD-RW Combo
Display:	15" TFT XGA	15" TFT XGA	14.1" TFT XGA
Modem/Ethernet:	56K modem, 10/100/1000 NIC, BT, Wifi	High speed 56K modem, 10/100/1000 NIC	56K modem, 10/100/1000 NIC, BT, Wifi
Pointing Device:	Touchpad With Scroll Zone	Touchpad and Pointing Stick	Touchpad With Scroll Zone
Operating System:	Microsoft Windows XP Professional	Microsoft Windows XP Professional	Microsoft Windows XP Professional
Warranty:	1 Year	3 Years	3 Years

**Our Price \$2052** **Save \$43**

WebCode: HCN0011

**Our Price \$2406** **Save \$105**

WebCode: CON1505

**Our Price \$2691** **Save \$104**

WebCode: HCN0007

## IBM Notebooks

Series: R50e  
Manufacturer #: 1834CM7  
Processor: Intel Celeron Mobile 1.4GHz  
Memory (Ram): 256MB 266MHz DDR  
Video Card: 64MB Intel 855GM  
Hard Drive: 30GB ATA-100  
Optical Storage: DVD/CD-RW Combo  
Display: 14.1 Backlit TFT  
Modem/Ethernet: 56K Modem, 10/100  
Pointing Device: Trackpoint  
Operating System: Microsoft Windows XP Pro  
Weight: 2.9kg  
Warranty: 1 year

IBM R51 model displayed



IBM X40 model displayed

**Our Price \$1263** **Save \$36**

WebCode: IBT4851

Series:	R51	G41	T43
Manufacturer #:	2887GVM	2881BPM	266884M
Processor:	Intel Pentium M 725 1.60GHz	Mobile Intel Prescott 3.33GHz	Intel Pentium M 750 1.86GHz
Memory (Ram):	512MB 333MHz DDR	256MB 333MHz DDR	512MB 533MHz DDR
Video Card:	Intel Extreme Graphics 2	NVIDIA GeForce FX Go5200	ATI Mobility RADEON x300
Hard Drive:	60GB ATA-100	40GB ATA-100	40GB ATA-100
Optical Storage:	DVD/CD-RW Combo	DVD/CD-RW Combo	CD-RW/DVD-ROM Combo
Display:	15.1 Backlit TFT	15.1 Backlit TFT	15" Backlit TFT
Modem/Ethernet:	56K Modem, 10/100, Wifi	56K Modem, 10/100, Wifi	56K Modem, 10/100/1000, Wifi
Pointing Device:	ThinkPad UltraNav	Trackpoint	Trackpoint
Operating System:	Microsoft Windows XP Pro	Microsoft Windows XP Pro	Microsoft Windows XP Pro
Warranty:	1 year	1 year	1 year

**Our Price \$1732** **Save \$217**

WebCode: IBT4796

**Our Price \$2304** **Save \$295**

WebCode: IBT4798

**Our Price \$3451** **Save \$98**

WebCode: IBT4200

## Toshiba Tecra A3 Notebook

- Tecra A3 (PTA30A-01U002)
- Intel Pentium M 740 Processor 1.7GHz
- 512MB DDR2 PC2700 Memory
- Intel® Graphics Media Accelerator 900
- 60GB 5400rpm Hard Drive
- DVD SuperMulti Optical Storage
- 15" TFT XGA Display
- V.92 modem, 10/100 TX-LAN
- 802.11abg WIFI



image used for illustration purposes only

**Our Price \$2288** **Save \$57**

WebCode: TOS2577

## Toshiba Portege M300 Notebook

- Portege M300 (PPM30A-02E001)
- Mobile Intel® Pentium® M Processor 733 ULV 1.2GHz, 256MB+256MB, 12.1" XGA, 60GB
- DVD SuperMulti (DVD±R±RW DVD-RAM), SD media slot, modem, LAN, Integrated Intel mini PCI card (802.11b/g)
- Integrated Bluetooth V1.2
- Integrated Touchpad, (Optional)



image used for illustration purposes only

**Our Price \$3529** **Save \$101**

WebCode: TOS4022

## Toshiba Portege M200 Tablet

- Portege M200 (PPM21A-02R88)
- Intel® Pentium® M Processor 725
- 1.6GHz 2MB L2 Cache 400MHz FSB, 512MB
- 12.1" TFT SXGA+
- 80GB, modem, LAN
- Integrated Intel wireless LAN mini-PCI card (802.11b/g)
- Integrated Bluetooth, (Optional USB FDD), Touchpad, 2 x USB (2.0)
- MS OneNote



image used for illustration purposes only

**Our Price \$3830** **Save \$130**

WebCode: TOS3506

Computer Systems

RENT SMART  
Because buying isn't

SEE PAGE 3 FOR DETAILS





## TFT Screen Clean

For use on all coated and non-coated Laptop, Notebook, TFT, Plasma, LCD, PDA, GPS, Mobile, basically any Screen or Monitor. Extensively tested by Users and Manufacturers, Laboratory and Industry test have shown that Cleansafe will clean and protect all screen surfaces.



**Our Price \$18** **Save \$4**  
WebCode: CLE0001

## Palmone Treo 650 Stylus Pack

Replacement Treo 650 smartphone styli are always a handy thing to have just in case you lose or snap one. Sold in pack of three.



**3 Pack**  
**Our Price \$16** **Save \$6**  
WebCode: USR6503

## Palmone LifeDrive Hard Case

A sturdy, stylish case surrounds a LifeDrive mobile manager. Convenient access to buttons and connectors allows user to use device even while it's inside the case. The brushed aluminum cover contrasted by the black, slip-resistant rubberized back makes it a unique and safe way to carry a LifeDrive mobile manager.



**Our Price \$52** **Save \$12**  
WebCode: USR9206

## Samsung Black 17" LCD Monitor 710V

Syncmaster 710V has a slim and stylish design. With a stunning picture resolution, it provides marvelous performance that is flexible for your working performance.

- 17" Viewable Area
- 290 cd/m<sup>2</sup> Brightness
- 500:1 Contrast Ratio
- 150/120 Viewing Angle (H/V)
- 25 ms Response Time
- Analogue Interface
- 1280x1024 Max. Resolution



**Our Price \$354** **Save \$145**  
WebCode: SAM1742

## Samsung Black 19" LCD Monitor 910T

Syncmaster 910T has an amazing colour calibration system that gives you perfect performance everytime.

- 19" Viewable Area
- 250 cd/m<sup>2</sup> Brightness
- 800:1 Contrast Ratio
- 170/170 Viewing Angle(H/V)
- 25 ms Response Time
- Analogue/Digital Interface
- 1280x1024 Max. Resolution



**Our Price \$569** **Save \$530**  
WebCode: SAM1917

## Samsung 17" LCD Monitor/Television 730MW

Delivering a 500:1 contrast ratio, 0.289mm pixel pitch, 1280 x 768 maximum resolution, scanning frequency of 30-61 kHz horizontal and 56-75 Hz vertical, and horizontal/vertical viewing angle of 150°/120°. The SyncMaster 730mw has a built-in TV tuner (with FM Radio support), is HDTV ready and has dual analog/digital inputs.



**Our Price \$774** **Save \$125**  
WebCode: SAM1747

## Philips 17" Business Silver SXGA LCD monitor

- Resolution: 1280 x 1024
- Brightness: 250 nits
- Contrast Ratio: 500:1
- Response time: 8 ms
- Size inc base: 375W x 377H x 210D
- Weight: 4.8kg



**Our Price \$408** **Save \$306**  
WebCode: PHP1630

## Philips 19" Business Black SXGA LCD Monitor

- Resolution: 1280 x 1024
- Brightness: 250 nits
- Contrast Ratio: 600:1
- Response time: 8 ms
- Size inc base: 425W x 410H x 235D
- Weight: 6.4kg



**Our Price \$603** **Save \$386**  
WebCode: PHP1909

## Philips 20" Widescreen Silver WSXGA LCD Monitor

- Resolution: 1680 x 1050
- Brightness: 300 nits
- Contrast Ratio: 600:1
- Response time: 16 ms
- Size inc base: 478W x 423.5H x 235D
- Weight: 7.6kg



**Our Price \$1095** **Save \$554**  
WebCode: PHP1615

## O2 XDAII Mini

- MS Win Mobile 2003 PocketPC Phone Edition
- Intel PXA 272 CPU, Clock speed: 416MHz
- Bluetooth V1.2 compliant
- 2.8" Transflective TFT LCD Screen
- 1.3 mega-pixel VGA camera
- Standby 160 hours, Talk time 4 - 5 hours
- 4 programmable buttons: Camera, Voice Recorder, Contact and Calendar
- Colour CMOS 1.3 mega-pixel camera



**Our Price \$930** **Save \$269**  
WebCode: XDA0300

## HP iPAQ Pocket PC RZ1710

With the HP iPAQ PC RZ1710, you can increase your storage capacity with SD and MMC memory cards so you can bring essential documents anywhere you go. Transfer documents, multimedia files and special programs onto memory cards and print using any SD enabled printer.



**Our Price \$379** **Save \$20**  
WebCode: CQ00117

## Palmone Tungsten T5

- 256MB flash memory
- Transfer files and folders back and forth to your desktop
- Running 320 x 480 display, landscape or portrait mode
- Edit Word and Excel docs, view PowerPoint files
- View photos, videos and play MP3s
- Built-in Bluetooth wireless technology
- Powerful Intel 416MHz XScale processor
- Palm OS 5.4



**Our Price \$540** **Save \$59**  
WebCode: USR1035

## O2 XDA III Pocket PC &amp; GSM Phone

One of the most powerful Windows Mobile based PDA's available, it's an enhanced version of the popular XDA II and is a personal organiser and a GPRS mobile all-in-one. With tri-band coverage for roaming to the USA, a 1.3 megapixel camera for taking high quality pictures, Bluetooth for use with your Bluetooth devices, Xda III is a flexible and sleek device. Use the integrated Wireless LAN for high-speed internet access.



**Our Price \$1456** **Save \$143**  
WebCode: XDA0400

## HP iPAQ Pocket PC RX3417

Tune in to your favourite music and view holiday photos stored on your desktop PC by simply streaming it to your iPAQ. With Media Control, you can get the freedom to play your music, videos and photos on your preferred players, from your desktop PC to your TV and home stereo system.



**Our Price \$580** **Save \$19**  
WebCode: CQ00119

## Palmone LifeDrive

- 4GB hard drive (3.85GB user accessible)
- LifeDriveTM smart file management
- Wi-Fi (802.11b) and Bluetooth v1.1
- 320 x 480 hi-resolution, colour display
- Supports native Word, Excel, and PowerPoint files
- Portrait and landscape viewing
- Supports secure wireless email access with attachments
- Built-in Microsoft Exchange ActiveSync
- MP3 player
- Intel 416MHz XScaleTM processor



**Our Price \$727** **Save \$172**  
WebCode: USR9203



## Panasonic Lumix DMC-LZ1 Digital Camera

- 4 Megapixel Effective Camera
- 6x Optical Zoom in a compact body
- MEGA Optical Image Stabiliser
- 2.0" TRM LCD Monitor
- Venus Engine Plus LSI

NEW



Winner of the  
PC User Magazine  
"TOP BUY" Award  
- June 2005

Our Price **\$455** Save **\$44**

WebCode PAN0024

## Panasonic Lumix DMC-FZ20 Digital Camera

- 5.0 Megapixel
- 12x Optical Zoom, 4x Digital
- Leica DC Vario-Elmarit Lens
- MEGA Optical Image Stabiliser (O.I.S.)
- Manual Focus Ring

Also Available in Silver  
WebCode PAN0025

Recommended  
by PC World in  
its December Issue  
as its pick for best  
value intermediate  
camera.

NEW



Our Price **\$945** Save **\$154**

WebCode PAN0026

## Kodak Easy Share C360 Digital Camera

- The smart C360—designed for all that captivates you.
- 5.0 MP for prints up to 20 x 30 in. (50 x 75 cm)
- 3x Optical zoom
- 17 easy-to-access scene modes and 5 color modes
- On-camera picture-enhancing features
- KODAK Color Science Chip

NEW



Our Price **\$432** Save **\$17**

WebCode KOD0360

## Kodak Easy Share Digital Camera 5.3MP Z740 + Bundled Printer Dock

Capture extraordinary detail with the Z740 Zoom Digital Camera. 10x optical zoom, 5.0 MP, everything you need to get the shot you want. Then simply dock your camera and touch a button to print real KODAK Pictures that last a lifetime.

NEW



Our Price **\$703** Save **\$46**

WebCode KOD0741

## Sony 4.1MP Cyber-shot DSCS40 Digital Camera

So small, yet so powerful—the Cyber-shot DSCS40 digital camera from Sony provides you with big features at an amazingly small price. With its high quality 1/2.7" Super HAD CCD, 3x optical zoom Carl Zeiss lens, and ultra-fast Real Imaging Processor it captures instantly beautiful 4.1 Megapixel images everytime.



Our Price **\$262** Save **\$37**

WebCode SONY0333

## Sony 5.1MP Cyber-shot DSCW55 Digital Camera

A classic design meets modern technology in the Cyber-shot W5 digital camera from Sony. It combines a traditional rangefinder camera layout with high-end features such as a huge 2.5" LCD screen, 5.1 Megapixel image capture, and high speed performance thanks to the Real Imaging Processor chip.



Our Price **\$529** Save **\$70**

WebCode SONY0330

## Olympus 5.0MP MJU-500 Digital Camera

- Retracting lens barrier
- 3x Optical Zoom
- Large 2.5" Hyper Crystal LCD
- 20 Scene programs
- Super macro mode from as close as 7cm
- Movie recording function with sound
- PicBridge support and TruePic TURBO
- Supplied with 32MB XD-Picture card



Our Price **\$539** Save **\$60**

WebCode OLY0049

## Olympus 4.0MP MJU Mini Digital Camera (Silver)

- 4-megapixel effective CCD for images up to 2272 x 1704 pixels
- Program (Auto), Movie, and 16 Scene program modes
- Shutter speeds from 1/1000 to 1/2 second
- Built-in all-weather speaker and microphone
- Lithium rechargeable battery and charger included



Our Price **\$374** Save **\$25**

WebCode OLY0046

## Canon IXUS 40 Digital Camera

The 4.0 Megapixel Digital IXUS 40 delivers an unparalleled combination of cutting edge technology and ultra compact style. Featuring Canon's revolutionary iA lens technology, the fully retractable 3x optical zoom lens delivers sharp, high resolution images. The new DIGIC II image processor provides fast performance and industry leading image quality, 60fps movie recording and playback with sound.



Our Price **\$499** Save **\$130**

WebCode CAN0337

## Canon 5MP Powershot S2iS Digital Camera

- Rock steady ultra-zoom. High resolution photos & movies.
- 5.0 Megapixel.
- Canon 12x optical zoom lens with Optical Image Stabilizer.
- Super fast DIGIC II Imaging Processor.
- Print&Share Button for "one push" printing and downloading of images straight from the camera.



Our Price **\$679** Save **\$120**

WebCode CAN0393

## Canon MV800i Digital Video Camera

- Super resolution 20x zoom lens
- High resolution 800k pixel CCD and DIGIC DV
- Stylish and compact, designed for simple operation
- Real Widescreen recording for widescreen playback on widescreen TVs
- Image Stabilizer function
- Night Mode



Our Price **\$682** Save **\$47**

WebCode CAN0366

## Sony DVD201 DVD Handycam

- DVD-RWR
- Carl Zeiss Lens
- 120x / 20x Selectable Digital zoom
- 2.5" LCD Hybrid Screen
- Advance HAD Technology
- Start/Stop Button on LCD Frame
- Video / VR mode
- Playlist Edit: Add, Delete, Move, Divide
- Photomovie Create
- Automatic White Balance



Our Price **\$1514** Save **\$235**

WebCode SONY9799

## Secure Digital Cards

- SanDisk Secure Digital Card
- 128MB (SJM0201) \$28
  - 256MB (SJM0202) \$45
  - 512MB (SJM0387) \$71
  - 1GB (SJM0388) \$136
- SanDisk Secure Digital Ultra
- 512MB (SJM1111) \$71
  - 1GB (SJM5987) \$162



## Compact Flash Cards

- SanDisk
- 128MB (SJM1188) \$24
  - 256MB (SJM1189) \$41
  - 512MB (SJM1190) \$70
  - 1GB (SJM1191) \$130
  - 2GB (SJM0690) \$258
- SanDisk Ultra II
- 256MB (SJM1933) \$47
  - 512MB (SJM1934) \$84
  - 1GB (SJM1935) \$155
  - 2GB (SJM0691) \$292



## xD Picture Cards

- Olympus
- 128MB (OLY0013) \$39
  - 256MB (OLY0010) \$70
  - 512MB (OLY0018) \$125
- SanDisk
- 64MB (SJM0383) \$26
  - 128MB (SJM0384) \$49
  - 256MB (SJM0385) \$77
  - 512MB (SJM0382) \$121



## Memory Stick

- Sony Memory Stick Pro
- 1GB (SNY0211) \$282
- SanDisk Memory Stick Pro
- 128MB (SJM0207) \$63
  - 256MB (SJM0707) \$99
  - 512MB (SJM0209) \$187
  - 2GB (SJM0390) \$385
- SanDisk Memory Stick Pro Ultra
- 256MB (SJM0704) \$65
  - 512MB (SJM0705) \$110
  - 1GB (SJM0703) \$207



RENT SMART  
Because buying isn't

SEE PAGE 3 FOR DETAILS

## Dymo LabelWriter LW310 USB

The most affordable label printer currently on the market. Suitable for dozens of business, home & office applications such as envelopes, stock, file folders and shelf labels. Direct thermal technology eliminates toner, ink and ribbon costs. Print width 40mm



Our Price **\$143** Save **\$6**  
WebCode \_\_\_\_\_ DYMO002

## Dymo LabelWriter 320

The most versatile label printer for any office. Prints labels up to 56 mm wide for envelopes, packages, file folders, disks, videotapes, name badges and much more. Improved with twice the print quality and 30% faster print speed. Use on USB port. Windows or Mac.



Our Price **\$286** Save **\$73**  
WebCode \_\_\_\_\_ DYMO001

## Dymo LabelWriter LW330 Turbo, USB & Serial

The fastest label printer available with outstanding print quality and just 2 seconds per label. Direct thermal technology eliminates toner, ink and ribbon costs. Prints forms, barcodes, graphics and photos. Print Width: 56mm



Our Price **\$319** Save **\$80**  
WebCode \_\_\_\_\_ DYMO003

## Wasp Barcode and Label Software Bundle

Wasp Barcode Labeler v5 (single user) with over 40,000 copies sold. Wasp Labeler is the top-selling barcode labeling software in the world! With Labeler v5's thoughtfully designed wizard interface, you can quickly create inventory, asset, address, barcodes & badge - practically any label for any industry. Ideal for Australian small business.

- Label wizard create labels step by step
- Data source wizard - Data linking from multiple tables
- Multiple number of label copies - Barcode image export
- Advanced serialization - Import data from virtually any database
- Import your favorite graphics - Serialize labels
- Print labels to any windows printer - Easy to use!

Label Software (WASO001) **\$235**

Printer (ZEB0001) **\$2200**



Our Price **\$2285** Save **\$685**  
WebCode \_\_\_\_\_ BUN011



## Wasp POS Point of Sale Software for PC Cash Register

Wasp QuickStore is the easiest, quickest way to checkout customers and manage inventory. Simple and powerful, the point-of-sale and inventory control features are ideal for most retail stores environments. Your complete point-of-sale solution!



Our Price **\$710** Save **\$85**  
WebCode \_\_\_\_\_ VAN003

## Wasp Mobile Asset Tracking Software Bundle

WASP MobileAsset Software offers the quickest and easiest way to track all your company assets including computers, printers, software, phones, tools, books, even personnel. Features: Add, Edit, Move, Dispose, Check-in/Out & Audit assets

Move by Location, Department, Purchase order or Custom filter  
Check-in & Check-out assets to track who has the asset & when due back.  
Print Receipts on both the PC & Mobile printers  
Schedule Maintenance to ensure assets are properly serviced  
Attach any type of File to an asset - Pictures, Warranties, User Manuals  
Import & Export Asset Data - Create your own asset barcode tags  
Calculate Depreciation to determine the value of an asset  
Easy, One-click synchronization between your PC and the handheld Data Collector  
Secure Logon guards your asset information & tracks "who did what"

Symbol Palm OS Terminal SPT 180X Series  
Palm OS platform, integrated miniature scan engine, Dragon Ball V2 - 33 MHz, Rugged housing meets IP54 Standards, 8 RAM and 4Mb of ROM, High-contrast liquid crystal display with enhanced backlight, 1-hour Ni-MH backup battery, 1.2 m drop to concrete, I/O port, Kit Inc Stylus, Slip Case, Lithium Ion Battery & Quick Reference Guide and Cradle

Mobile Asset Tracking Software (VAN0015) **\$836**

Symbol Palm (VAN0025) **\$1795**



Our Price **\$2499** Save **\$96**  
WebCode \_\_\_\_\_ BUN008

## Wasp Fontware Software

WASP Barcode FontWare (Single User)  
Wasp FontWare is a powerful barcode utility that seamlessly integrates TrueType barcode fonts with your favorite business software and database applications. Wasp Bar Code fonts are compatible with all Windows applications including the most common word processors and spreadsheets. Easily create bar codes simply by using a font. Generating bar codes has never been easier!



Our Price **\$199** Save **\$76**  
WebCode \_\_\_\_\_ VAN001

## Wasp Affordable Employee Time & Attendance

WaspTime Time and Attendance offers computerised and automated time and tracking system with the proven technology of Barcode, Magstripe or RFID-based employee tags and time clocks.

- This ready-to-use solution includes
- Barcode, Magstripe or RFID time clock
  - WaspTime - Time and Attendance software
  - 25 Employee Tags either Barcode, Magstripe or RFID (additional tags can be purchased)
  - Includes license for 25 employees (additional licenses can be purchased in increments of 50)
  - WaspTime Setup wizard to help with initial configuration
  - 2 Ethernet cables (supports either direct to PC or via network)
  - Power supply (an optional power-over-Ethernet is available)

### Features:

- Proven technology of barcode system
- Automatically capture employee time (arrival time, break in/out, lunch, departure time)
- Automatically calculate hours worked and summarize for reports or payroll processing
- Capture and automatically process overtime
- Ability to capture sick days, vacation, conference time away • Supports, weekly, bi-weekly, bi-monthly, monthly payroll
- Over 12 reports including attendance report, timecard report, wage report, overtime report, payroll summary, absence report, roll call, employee list, early out report... plus create custom reports using Crystal Reports



Barcode Version  
Our Price **\$852** Save **\$66**  
WebCode \_\_\_\_\_ VAN0018

Magstripe Version  
Our Price **\$1055** Save **\$85**  
WebCode \_\_\_\_\_ VAN0019

RFID Tag Version  
Our Price **\$1375** Save **\$110**  
WebCode \_\_\_\_\_ VAN0020

**Posiflex Hardware Bundle**

You can turn a standard PC into a POS Computerised Cash Register when you buy a POSIFLEX hardware bundle. Simply "plug and play" includes Posiflex PP56000 Dot-matrix printer, CR4100 Cash Drawer & CD2860 Hand Scanner.



**Our Price \$627** **Save \$368**  
WebCode: POS0022

**Posiflex CR-4100 CASH Drawers**

Australia's most popular Cash Drawer which is receipt printer activated and designed to hold Australian currency with a tamper-proof designed casing and a removable cash tray for overnight security, it is security by design.

- Three position lock
- Cheque slot
- Supplied with 1 metre cable to connect to Posiflex, Epson, Star, Axiom and current Citizen printers.
- Dimensions 428 (W) x 460 (D) x 100mm (H).



**Our Price \$176** **Save \$49**  
WebCode: POS0008

**Epson TMT88 Thermal Receipt Printer**

"Plug and play" high-speed Thermal Receipt Printer with clam shell "drop and load" design will work with most POS software applications.

- High-speed up to 150mm per sec
- Auto paper cutter
- Drop & load paper loading
- Prints a wide range of barcode symbologies
- Flash ROM for logo
- Includes Power Supply & Data Cable



**Our Price \$605** **Save \$275**  
WebCode: EPS0011

**Posiflex CD-2860 Barcode Scanner**

The CD2860 contact touch barcode reader has a simple cable configuration. Plug into your PC and you can touch & read barcodes instantly.

- 80mm reading aperture
- 0-30mm scanning distance
- Auto discrimination
- Beeper & LED indicator
- Includes bench stand



**Our Price \$143** **Save \$102**  
WebCode: POS0020

**Wasp Captra Mobile Sales Software Bundle**

QuickBooks functionality right on your PDA - This product integrates with QuickBooks® Pro, Accountant, Enterprise and the variety of new Premier editions, Main Features:

- CaptraAdmin PDA management facility, Update Customer Records
- Prepare, Print and capture Signature on Estimates and Invoices
- Produce and Print Credit Memos, Receive Payments
- Manage Vendor Details, Issue and Print Purchase Orders
- Review Item Pricing, Count Inventory, Integrated Printer Subsystem
- Integrated Barcode Scanning, Cradle, Modem, LAN and Wireless LAN/WAN and internet sync, Remote
- Synchronization. Handheld works on most Palm OS devices

Symbol Palm OS Terminal SPT 18XX Series  
Palm OS platform, Integrated miniature scan engine, Dragon Ball VZ - 33 MHz, Rugged housing meets IP54 Standards, 8 RAM and 4Mb of ROM, High-contrast liquid crystal display with enhanced backlight, 1-hour Ni-MH backup battery, 1.2 m drop to concrete, IrDA port., Kit Inc Stylus, Slip Case, Lithium Ion Battery & Quick Reference Guide and Cradle

Mobile Sales Software (VAN0016) \$505

Symbol Palm (VAN0025) \$1795



**Our Price \$2149** **Save \$346**  
WebCode: BUN0009

**Posiflex PP-5600 DOT Matrix Receipt Printer**

This low-cost Dot Matrix Receipt Printer allows for rapid speed printing with up to three duplicate copies for each receipt issued.

- Tear off cutter blade
- Approx 3.5 lines per sec.
- 20KB input buffer
- Power supply and data cable included
- ESC/POS command compatible



**Our Price \$352** **Save \$73**  
WebCode: POS0019

**Posiflex CD-3830 Barcode Scanner Series**

With enhanced performance this long-distance barcode reader has a simple cable configuration. Simply plug into your PC and make barcode reading fast and efficient. Includes upright hands-free stand.



**Our Price \$209** **Save \$186**  
WebCode: POS0021

**Wasp Mobile Inventory Software Bundle**

Wasp MobileInventory equips you to manage and track your inventory using your desktop PC and your Palm OS or Windows/CENT handheld! Desktop Features:

- Efficiently manage physical inventory
- Check-in/Check-out inventory items
- Track your inventory by item location, purchase order, supplier, serial number, lot, pallet & date code
- Effortlessly manage location information for each item
- Customise your forms to present only the information that's important to your business
- Define text, numeric, and date fields
- Create, customize & print labels with the integrated Wasp Labeler software

Symbol Palm OS Terminal SPT 18XX Series  
Palm OS platform, Integrated miniature scan engine, Dragon Ball VZ - 33 MHz, Rugged housing meets IP54 Standards, 8 RAM and 4Mb of ROM, High-contrast liquid crystal display with enhanced backlight, 1-hour Ni-MH backup battery, 1.2 m drop to concrete, IrDA port., Kit Inc Stylus, Slip Case, Lithium Ion Battery & Quick Reference Guide and Cradle

Mobile Inventory Software (VAN0017) \$662

Symbol Palm (VAN0025) \$1795



**Our Price \$2299** **Save \$296**  
WebCode: BUN0010

**Posiflex PP-7000 "Aura" Thermal Receipt Printer**

The Posiflex PP7000 Thermal Receipt Printer will give your store a professional image with receipts issued at high speed. Easy Drop and Load paper loading.

- High-speed - silent operation
- Up to 180mm per sec
- Auto paper cutter
- Stores graphic logo
- Power supply and data cable included
- ESC/POS command compatible



**Our Price \$484** **Save \$211**  
WebCode: POS0018

**PSC VS800 Omni Directional Bench Scanner**

Compact Design, Advanced visible laser scanner system, 20cm scanning depth of field, wide scan area, high first pass read rate, scans a variety of barcodes, includes power supply and cable.



**Our Price \$496** **Save \$154**  
WebCode: PSC0006



### Telstra 5100 DECT Cordless Phone

- Calling number display (type 2)
- 50 name and number phonebook
- Multi-handset
- Call waiting button
- Flash message indicator



**Our Price** **\$50** **Save \$10**  
WebCode CL55100

### Telstra 5150 DECT Cordless Phone

- Integrated digital answering machine with 11 min recording time
- Calling Number Display
- Option to connect 5 handsets to one base unit
- Flashing Message Indicator
- 50 name & number Phonebook
- Adjustable handset ring volume & melodies
- Handfree on handset
- Answering machine remote access



**Our Price** **\$83** **Save \$17**  
WebCode CL55150

### Telstra F5500 Cordless Telephone

- Send and Receive SMS
- Handfree on handset
- 150 name and number phonebook
- Calling Number display
- Colour graphical display
- Sim card reader
- Handfree headset included
- Option to connect 5 handsets to one base unit



**Our Price** **\$141** **Save \$29**  
WebCode CL55500

### D-Link Wireless Internet/Security Camera (DCS-900W)

The D-Link DCS-900W is an entry-level Wireless Internet Camera which connects to either 802.11b Wireless or 10/100Mbps Fast Ethernet networks. The DCS-900W features a built-in web server, which means that you do not need to have a computer to stream video images directly to the Internet. The software package bundled with the DCS-900W provides basic security features, with monitoring capability of up to 4 cameras and recording to hard drive.



**Our Price** **\$317** **Save \$82**  
WebCode DLK1121

### D-Link Indoor 5dBi Wireless Omni-Directional Antenna (DWL-50AT)

The D-Link DWL-50AT is a 5dBi Gain Dipole Antenna with Reverse SMA connector. It can help to improve the transmit rate and extend the transmit distance of wireless access point (DWL-1000AP) or wireless gateway router (DI-714) which have a reverse SMA connector. To ensure a better performance, you should not only improve the RF on transmitter but also on the receiver, i.e. a high gain card.



**Our Price** **\$29** **Save \$6**  
WebCode DLK0310

### D-Link 1 port Print Server USB printer (DP-301U)

A compact print server that connects to your Ethernet or Fast Ethernet network. With its high-speed USB port, the DP-301U allows those on your network to access and share a USB printer no matter where they reside on the network. Compact in size, it's equipped with one USB version 1.1 port for seamless connection to most USB printers and supporting all major network Operating Systems and protocols.



**Our Price** **\$132** **Save \$27**  
WebCode DLK0198

### D-Link Hardware accelerated Audio/Video Converter (DUB-AV300)

The DUB-AV300 is an audio/video converter with built-in hardware encoder as well as advanced video display & capture of analog camera, camcorder or VCR. Also supports MPEG1/2/4 Compression on the fly.



**Our Price** **\$156** **Save \$44**  
WebCode DLK0975

### D-Link Internet/Security Camera with 2-Way Audio (DCS-3220)

A versatile security system that allows you to watch, listen and talk remotely. The camera connects to an Ethernet network, and to broadband Internet. Equipped with a high-quality CCD sensor, zoom, 2-way audio capability and advanced software functions for multi-camera monitoring and management, this camera provides a comprehensive system for surveillance.



**Our Price** **\$629** **Save \$140**  
WebCode DLK9247

### D-Link Indoor 6dBi Wireless Directional Antenna (ANT24-0600)

The ANT24-0600 2.4GHz Directional Antenna is a range extender antenna that provides output 2 to 2.5 times higher than that of the 2dBi dipole antennas normally bundled with wireless LAN devices. The ANT24-0600 antenna works with all access points and remote routers equipped with an RP-SMA or RP-TNC connector.



**Our Price** **\$80** **Save \$19**  
WebCode DLK0140

### D-Link 1 port Print Server Parallel printer (DP-301P)

Compared to software-based printer sharing, the DP-301P eliminates the need to have your printer connected to a host computer. With the DP-301P, everyone on your network can be sure that their printing jobs go through at any time. Documents also print faster from the DP-301P than from software-based printer sharing solutions.



**Our Price** **\$112** **Save \$27**  
WebCode DLK0052

### D-Link 5 port Gigabit Switch (DGS-1005D)

Get the blazing speed of Gigabit Ethernet with the DGS-1005D, a 5-port 10/100/1000Mbps Gigabit Switch that delivers power, performance, and reliability in one cost-effective, space-saving design. Increase the speed of your network server and backbone connections, or make Gigabit to the desktop a reality. Transfer graphics, CGI, CAD, or multimedia files across the network instantly.



**Our Price** **\$136** **Save \$40**  
WebCode DLK0666

### D-Link Wireless Internet/Security Camera with Pan/Tilt & Audio (DCS-5300G)

The DCS-5300G Wireless Internet Camera is an advanced security system that allows you to watch and listen remotely. It provides you with high-quality video and audio. Equipped with built-in Web server, a micro-phone and a motor for rotation, this camera can be panned, tilted and zoom remotely, accessed and controlled from any PC/notebook over a local network or through the Internet.



**Our Price** **\$919** **Save \$210**  
WebCode DLK9248

### D-Link Indoor 7dBi Wireless Omni-Directional Antenna (ANT24-0700)

The ANT24-0700 is a High-Gain omni-directional antenna designed for 2.4GHz ISM band indoor use. It can be used with 802.11b and 802.11g wireless LAN devices such as access points and remote routers. It can connect to your wireless device through an extension cable (provided with the antenna), or directly attached to your wireless device.



**Our Price** **\$79** **Save \$20**  
WebCode DLK9245

### D-Link Wireless 802.11g Print Server - USB printer (DP-G310)

The Wireless Print Server is the ideal network printing solution for small offices, home offices, schools and other businesses that require printer sharing. With its high-speed USB port, the DP-G310 allows those on your network to access and share a USB printer wirelessly no matter where they reside on the network. Equipped with one USB version 2.0 port for seamless connection to most printers.



**Our Price** **\$220** **Save \$49**  
WebCode DLK1054

### D-Link 4 port USB 2.0 + 3 port FireWire Hub (DFB-H7)

The D-Link DFB-H7 USB 2.0/FireWire Combo Hub is a combination 6-port USB 2.0 and 1394 FireWire hub that brings together two popular high-speed technologies for an all-in-one, high-speed, high performance solution for digital media peripherals.



**Our Price** **\$77** **Save \$12**  
WebCode DLK0133



**D-Link 54Mbps Wireless Travel router (DWL-G730AP)**

The D-Link AirPlusG DWL-G730AP is a portable and convenient wireless solution for the traveling business person delivering 802.11g wireless connectivity with a maximum wireless signal rate of up to 54Mbps\*. Use it in conference rooms, hotel rooms, or even at hotspots. The DWL-G730AP can be used as an access point, router or wireless client.



**Our Price \$142 Save \$38**

WebCode: DLK9240

**D-Link 54Mbps Wireless Broadband Router (DI-624+)**

The DI-624+ is a high-speed 2.4GHz 802.11g wireless broadband router with a built-in 4-port Fast Ethernet Switch. It incorporates high-speed wireless LAN with speeds of up to 54Mbps. This router lets you quickly share DSL or cable modem Internet connection, with or without the network wires.



**DI-624 108Mbps Our Price \$159 Save \$41**

WebCode: DLK5403

**DI-624+ 54Mbps Our Price \$128 Save \$39**

WebCode: DLK5407

**D-Link Wireless PCMCIA Card (DWL-G650+)**

This adapter supports high-speed wireless networking of up to 54Mbps, while providing seamless Internet sharing with all existing 802.11b and 802.11g wireless equipment. This adapter is the ideal wireless solution that offers an upgrade to a fast, new technology while protecting your past investments through interoperability with your current network equipment.



**DWL-G650 108Mbps Our Price \$76 Save \$24**

WebCode: DLK5401

**DWL-G650+ 54Mbps Our Price \$59 Save \$20**

WebCode: DLK5405

**D-Link Router With Built-in Switch & USB Print Server (DI-704UP)**

A versatile router that combines broadband built-in Internet sharing with robust firewall security, print server and built-in 4-port switch for ready printer and workstation connection. For home and SOHO, as well as for business users looking for advanced functions, network protection and policy-based content filtering.



**Our Price \$102 Save \$28**

WebCode: DLK1115

**D-Link Wireless Media Player (DSM-320)**

The DSM-320 unites your network with your home entertainment center, allowing you to share, access, and enjoy your digital media. Whether it is music, videos, or photos in the comfort of your living room. The DSM-320 supports 802.11g wireless standards with transfer speeds up to 54Mbps, giving you maximum throughput for your digital media.



**Our Price \$352 Save \$48**

WebCode: DLK0129

**D-Link 54Mbps Wireless PCI Adapter (DWL-G520+)**

The DWL-G520+ wireless PCI card is an enhanced 802.11g high-performance, wireless card for desktop computers. This card supports high-speed wireless networking of up to 54Mbps, while providing seamless interoperability with all existing 802.11b and 802.11g wireless equipment.



**DWL-G520 108Mbps Our Price \$80 Save \$20**

WebCode: DLK5400

**DWL-G520+ 54Mbps Our Price \$65 Save \$27**

WebCode: DLK9991

**D-Link 54Mbps Wireless VPN Router with Print Server (DI-824VUP+)**

A 802.11g wireless VPN router that combines broadband Internet sharing with robust VPN firewall security, print server and built-in 4-port switch for ready printer and workstation connection.



**Our Price \$270 Save \$80**

WebCode: DLK9221

**D-Link USB/Ethernet ADSL Modem (DSL-502T)**

Using ADSL technology, your Internet speeds can be up to 150 times faster than a 56K analog modem over a standard phone line. Two computers can simultaneously connect via the USB and Ethernet port to share its high-speed Internet connection. You can connect to its Ethernet port regardless of the operating system you are using, or connect to its USB port to allow easy installation to a USB equipped computer running Windows 98SE, Me, 2K, XP, or Mac OS 9 and OS X.



**Our Price \$94 Save \$26**

WebCode: DLK9977

**D-Link TV Tuner with Remote Control (DUB-T210)**

The D-Link DUB-T210 provides two convenient functions for PC users: It connects your analog camera, camcorder and VCR to your PC to convert analog to digital image/sharing for editing, and it connects to your PC to your cable TV line to let you view TV programs on your computer screen and save these programs in digital AVI or compressed MPEG formats on your hard disk or CD ROMs.



**Our Price \$152 Save \$41**

WebCode: DLK9249

**D-Link 54Mbps Wireless USB Key (DWL-G122)**

A high-performance 802.11g wireless LAN USB adapter that connects your computer to a high-speed wireless LAN. This adapter simply plugs to your computer through a fast USB 2.0 interface to provide up to 54Mbps wireless speed. This adapter is an ideal solution for notebook and laptop PC users needing a fast and standard mobile network connection.



**DWL-122 11Mbps Our Price \$63 Save \$17**

WebCode: DLK0390

**DWL-G122 54Mbps Our Price \$75 Save \$15**

WebCode: DLK1153

**D-Link 8-Port 10/100Mbps Switch (DES-1008D)**

D-Link DES-1008D is an unmanaged 10/100Mbps switch designed to enhance small workgroup performance while providing a high level of flexibility. Plug any port to either a 10Mbps or 100Mbps network to multiply bandwidths, boost response time and satisfy heavy load demands. 8-port 10/100Mbps Auto-sensing.



**Our Price \$63 Save \$17**

WebCode: DLK0405

**D-Link ADSL Modem with 54Mbps Wireless Router (DSL-G604T)**

With a built-in ADSL interface, 802.11g high-speed wireless LAN, a 10/100BASE-T Ethernet switch ports and advanced router functions, this device gives your business a convenient and cost-effective way to install a secure, fast network with bottleneck-free link to the outside world. The DSL-G604T is an ADSL Router designed for home or office use.



**Our Price \$172 Save \$28**

WebCode: DLK5109

**Logitech Quickcam Express**

Now you can meet face-to-face online with live video calls. Or make your instant messages come alive by adding live video to your MSN Messenger or Yahoo! Messenger. Or set up a webcam to share your photos. Or snap and send photos and video along with your e-mail as easily as you send text.



**Our Price \$45 Save \$25**

WebCode: LOG3412

**Logitech USB Microphone**

No drivers to download and no worries... that's easy plug-and-play, and that's what you get from the Logitech USB Desktop Microphone. You also get true digital quality and a noise-canceling technology to filter out unwanted background noise and deliver better voice recognition, better voice command, better voice recording, and more.



**Our Price \$30 Save \$20**

WebCode: LOG3386

**Connectland Mini 2.1CH USB Speakers**

The Connectland Mini 2.1CH USB Speakers is an innovative way to boost the sound and multimedia capabilities of your notebook. Compact Design - a compact speaker system that you can easily carry along with your laptop. High Quality Sound - newly developed built-in class D, 1 bit digital amplifier outputs clear digital sound.



**Our Price \$49 Save \$45**

WebCode: CLD0001

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SEE PAGE 3 FOR DETAILS

## Avision AV210 A4 Doc Scanner with ADF

The new Avision AV210 scanner is designed to occupy minimum desk space and features 20 ppm scanning, USB2.0 interface and 48 bit colour which is exceptional considering their high scanning speed and modest price.



**Our Price \$729** **Save \$40**  
WebCode PRS0007

## Avision 8000S Flatbed A3 Scanner

The AV8000S comes as a flatbed scanner with or without an automatic document feeder. With the document feeder attached, the AV8000S is capable of scanning up to 35 pages per minute and is able to hold up to 50 pages at once. To make scanning even more effortless, the AV8000S comes packaged with a SCSI interface kit, TWAIN drivers and a comprehensive software collection for Windows.



**Our Price \$2345** **Save \$150**  
WebCode AV0006

## Digimemo Digital Notepad

The Digimemo A501 is the world's first and unique standalone device with storage capabilities that digitally captures and stores everything you write or draw with ink on ordinary paper, without the use of computers and special papers. Then, you can view, organize and share (e-Mail) your handwriting notes in your hands.



**Our Price \$159** **Save \$10**  
WebCode AHY0056

## Linksys Wireless-G Broadband Router (WRT54G)

- All-in-one Internet-sharing Router, 4-port Switch, and Wireless-G Access Point
- Wireless data rates up to 54Mbps—5 times faster than Wireless-B (802.11b)
- Shares a single Internet connection and other resources with Ethernet wired and Wireless-G clients
- Also interoperates with Wireless-B Devices



**Our Price \$128** **Save \$31**  
WebCode LNK0009

## Linksys ADSL Gateway (AG241)

- High-speed ADSL Modem gives you a fast, "Always On" connection to the Internet
- Connect your PCs via the built-in Router and 4-port Switch to jump start your Ethernet network and share the Internet throughout your household
- Advanced firewall and security features protect your PCs, your data, and your family
- Compatible with both ADSL1 or ADSL2 standards



**Our Price \$142** **Save \$47**  
WebCode LNK0241

## Linksys Wireless-G USB Card (WU54G)

- Connects your desktop or notebook to a wireless network at up to 54Mbps when used with a USB 2.0 port
- Easy, no-tools setup on any desktop or notebook computer with USB support
- Also compatible with Wireless-B networks (at 11Mbps)
- Wireless communications are protected by up to 128-bit data encryption



**Our Price \$79** **Save \$20**  
WebCode LNK0051

## Linksys Network Storage Link (NSLU2)

Connect a USB Hard Drive or Memory Stick to the new Linksys Network Storage Link and everyone with permission can access the drive. Share company data across the network, or use it at home for a central library of pictures or music! You can even access the drive from the Internet when you're away!



**Our Price \$162** **Save \$37**  
WebCode LNK0134

## Linksys Wireless-G ADSL Gateway (WAG54G)

- High-speed ADSL Modem gives you a fast, "Always On" connection to the Internet
- Connect your PCs via the built-in Router and 4-port Switch to jump start your Ethernet network and share the Internet throughout your household
- Built-in Wireless-G (802.11g) Access Point also lets you connect without running wires



**Our Price \$202** **Save \$47**  
WebCode LNK0075

## Linksys Wireless-G Notebook Adapter (WPC54G)

- High-speed Wireless-G (802.11g) networking for your notebook computer
- Data rates up to 54Mbps -- 5 times faster than Wireless-B (802.11b)
- Also interoperates with Wireless-B networks (at 11Mbps)
- Advanced wireless security: Wi-Fi Protected Access (WPA), and up to 256-bit encryption



**Our Price \$78** **Save \$21**  
WebCode LNK0008

## Linksys Wireless G Range Extender (WRE54G)

- The easiest way to expand your wireless network's coverage
- Save on wiring costs -- no wired connection to your network necessary
- Extend your wireless signal into hard-to-reach areas
- Compatible with both Wireless-G and Wireless-B networking clients



**Our Price \$123** **Save \$42**  
WebCode LNK0128

## Linksys Wireless-G SRX Internet Sharing Router (WRT54GX)

- Internet-sharing Router, 4-port Switch, with a built in speed and range enhanced Wireless-G (802.11g) Access Point
- Shares a single Internet connection and other resources with Ethernet wired, Wireless-G, -B, and other SRX devices
- New SRX technology: the farther away, the more advantage -- up to 8 times faster than standard Wireless-G (802.11g)



**Our Price \$313** **Save \$66**  
WebCode LNK0242

## Linksys ADSL Modem (ADSL2MUE)

- High-speed ADSL modem gives you a fast, "Always On" connection to the Internet
- Up to 12 Mbps download speeds, 200 times faster than dial-up analog modems
- Shares your existing telephone line to connect to the Internet, without tying up the phone
- Connects to your PC over 10/100 Ethernet or USB



**Our Price \$97** **Save \$38**  
WebCode LNK0244

## Linksys Wireless-G PCI Card (WMP54G)

- Wireless-G (802.11g) connectivity for your desktop PC
- Incredible data rates up to 54Mbps in the 2.4GHz radio band
- Also interoperates with Wireless-B (802.11b) networks at 11Mbps
- Put your PC wherever you want, with no cabling hassle



**Our Price \$78** **Save \$21**  
WebCode LNK0007

## Linksys Wireless-g Internet Video Camera (WVC54G)

- Sends a high-quality live audio/video stream to your network wirelessly over 802.11g -- viewable from anywhere
- Built-in stand-alone web server, no PC necessary
- Security Mode automatically sends email alerts with video clips upon motion detection
- Supports up to four simultaneous remote users



**Our Price \$353** **Save \$126**  
WebCode LNK0400

## Linksys Wireless-G SRX Network Adaptor (WPC54GX)

- High-speed Wireless-G networking for your notebook computer, now with SRX performance enhancement
- New SRX technology: the farther away, the more advantage -- up to 8 times faster than standard Wireless-G (802.11g) SRX also increases wireless range by up to 3 times and reduces dead spots in coverage area
- Interoperates with standard Wireless-G and Wireless-B networks



**Our Price \$190** **Save \$39**  
WebCode LNK0243

**EPSON****Canon****WACOM****Input Devices****HP Scanner ScanJet 3770**

Slim but reliable, the ScanJet 3770 easily digitises photos, documents and other items with impressive detail and sharpness. Scanning at up to 1200 x 2400 hardware resolution and 48-bit colour, it gives you brilliant true-to-life images that can be easily printed to produce high-quality photo prints.

**Our Price \$223 Save \$51**

WebCode HPS1915

**HP ScanJet 5590 Digital Flatbed Scanner**

- Unattended two-sided, multi-page scanning with ADF
- Scan up to 8 ppm (4 ipm) and preview scan in about 7 seconds
- Resolution: 2400 dpi
- Scanning depth: 48-bit
- USB 2.0 Connectivity

**Our Price \$895 Save \$204**

WebCode HPS1910

**Epson Perfection 2480 Photo Scanner**

- Outstanding 2400 x 4800 dpi resolution with Matrix CCD technology and On Chip Micro-Lens
- Integrated Transparency Unit (TPU) for faster scanning of strip film and slides
- Improved EPSON Scan driver, featuring photo restoration tools

**Our Price \$265 Save \$54**

WebCode EPS480

**Epson Perfection 4990 Photo Scanner**

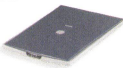
- High Optical Density of 4.0 - for incredibly accurate colour tone capture
- High Resolution - 4800 dpi resolution using Matrix CCD Micro Lens Technology
- Advanced Film Scanning - new wider scanning area moving carriage-type Transparency Unit (TPU)

**Our Price \$784 Save \$162**

WebCode EPS4990

**Canon Scanner CanoScan LIDE 20**

- 600 x 1200 dpi optical resolution and 48-bit colour
- Simple to connect - one plug scanning with Canon's user-friendly interface allows one touch operation of common scanning tasks
- New PDF compatible function
- Advanced 2-Lid

**Our Price \$88 Save \$11**

WebCode CAN0083

**Canon Scanner CanoScan 9950F**

- 4800 dpi Hyper CCD IV sensor with 48-bit colour depth
- Scan up to 30 frames of 35mm filmstrip in a single pass, 12 x 35mm slides, medium and up to 5" x 4" large format film.
- USB 2.0 Hi-Speed FireWire (IEEE1394) dual interface
- Automatic dust, scratch, fading, graininess and backlight correction technology (FARE Level 3) for film scanning

**Our Price \$704 Save \$95**

WebCode CAN0336

**Netgear (WPN824) RangeMax Wireless Router**

Powered by 7 smart antennas which adapt on-the-fly to interference, eliminating dead spots and delivering up to 10x more wireless coverage and speed than basic 802.11g routers. RangeMax MIMO (Multi-In, Multi-Out) technology is 100% 802.11bg compatible and provides legacy devices with up to 50% improvement in performance.

**Our Price \$188 Save \$61**

WebCode NTG7317

**Netgear (WPN511) RangeMax Wireless PC Card**

Use with the WPN824 Wireless Router for 1000% the coverage and speed of 802.11g. Because there are no more dead spots, you can place your desktop PC anywhere in your home without the need for repeaters or boosters. Keep your network secure with included WEP and WPA security settings.

**Our Price \$112 Save \$37**

WebCode NTG7327

**Netgear (WPN311) RangeMax Wireless PCI Adapter**

Use with the WPN824 Wireless Router for 1000% the coverage and speed of 802.11g. Because there are no more dead spots, you can place your desktop PC anywhere in your home without the need for repeaters or boosters. Keep your network secure with included WEP and WPA security settings.

**Our Price \$111 Save \$38**

WebCode NTG7316

**Wacom Graphire3 Digital Photographic Toolkit**

The Graphire3 6x8 Digital Photographic Toolkit. The Digital Photographic Toolkit is specifically designed to meet the needs of Digital Photographers, by maximising the fun and ease of manipulating and sharing Digital Photos. The Graphire3 6x8 Digital Photographic Toolkit comes in a limited edition silver colour, with software which creates a Seamless Digital Photographic workflow.

**Included Software**

- Ulead Photo Explorer 8 SE Basic
- Adobe Photoshop Elements 2.0
- Photo Express 4 SE for Wacom
- Corel Painter Essentials 2

**Our Price \$210 Save \$39**

WebCode WAC0407

**Wacom PenPartner**

The pen tablet perfect for Microsoft Office applications. Make notes and insert signatures, annotate your PowerPoint presentations, use handwriting recognition features and much more. Includes JustWrite Office for easy document mark-up and annotation.

**Our Price \$55 Save \$25**

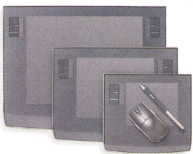
WebCode WAC0103

**Wacom Intuos3**

The Intuos3 extends the functionality of Wacom's pen tablets and introduces an exciting new look and innovative tablet features for improved workflow. The enhanced Intuos3 look-and-feel is improved by with new industrial design including an elegant transparent surface with a matte-finish active area, a new Grip Pen design, and a new two-position pen standholder.

Wacom's new Intuos3 Grip Pen is more comfortable to hold, and features 1024 levels of tip and eraser pressure, tilt, angle and direction, and two side buttons that act as modifier keys, keystrokes, or mouse buttons. As with all Intuos3 tools, the pen's functionality is completely customizable through Wacom's Control Panel software.

Additional functionality is provided through new programmable buttons called ExpressKeys and an innovative, integrated Touch Strip. The ExpressKeys are four programmable keys designed to optimize workflow by providing quick access to commonly used modifiers, mouse clicks, keystrokes, and other time-saving operations.

**Our Price \$308 Save \$41**

WebCode WAC0430

**Our Price \$484 Save \$65**

WebCode WAC0630

**Our Price \$605 Save \$144**

WebCode WAC0930

**Our Price \$111 Save \$38**

WebCode NTG7316

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## Netcomm USB Ethernet Mini Print Server

The NP3645 USB Ethernet Mini Print Server is a stand-alone print server that connects directly to a USB printer for efficient print sharing. It supports most USB printers including laser, colour and bubble-jet and offers a USB port, which connects direct to the printer, an Ethernet port to connect to the network.



**Our Price** **\$147** **Save \$18**  
WebCode NET9312

## Plantronics Stereo PC Headset with Microphone

This headset is equipped with convenient inline volume and mute controls and a quickadjust microphone boom for correct placement. Noise cancelling microphone has superior speech recognition for internet chat/telephony and video conferencing.



**Our Price** **\$49** **Save \$17**  
WebCode PT5007

**Check out our huge range of ink and toner cartridges on page 29!**



## Fuji Xerox DocuPrint C525 A A4 Colour Laser Printer

- Black Print Speed 25ppm
- Colour Print Speed 5ppm
- First Page Out 9 Sec Black 17 Sec Colour
- Memory Size 64MB
- Max Duty Cycle 45,000 ppm
- Resolution 9600 x 600
- Image enhancement
- Paper capacity 250 sheets Std / 950 Max



**Our Price** **\$672** **Save \$125**  
WebCode FXP0250

## Fuji Xerox DocuPrint C2428 A3 Colour Office Printer

- 24 ppm in colour or black and white.
- First page out in 12 seconds.
- True 1200 x 1200 dpi resolution at full rated speed.
- A 350MHz Power PC 603e processor, 32 bit/64MHz PC bus and 128MB RAM as standard.
- 10/100BaseT network support.



**Our Price** **\$4811** **Save \$903**  
WebCode FXP2428

## Fuji Xerox DocuPrint 240A A4 Black & white Office Printer

- 24 ppm, first page out in 10 seconds.
- Full engine speeds at true 1200 x 1200 dpi resolution.
- A 266MHz RISC
- PowerPC603e processor and 64mb standard memory
- 10/100BaseT network support as standard.
- 75,000 maximum monthly duty cycle.



**Our Price** **\$1200** **Save \$224**  
WebCode FXP0240

## Fuji Xerox Phaser 5500 A3 Black & white Office Printer

- 50 ppm 1-sided; first page out time 3 seconds (in ready mode)
- 500 MHz Phaser Controller and standard 128MB with the option of up to 512MB of memory.
- Up to 300,000 pages monthly duty cycle.
- Edge-to-edge printing, collating, N-up and booklet printing.
- Up to A3 and tabloid, 60 to 216 gm
- Takes care of itself - Web based admin tools offer easy printer management.



**Our Price** **\$4903** **Save \$922**  
WebCode FXP5500

## Fuji Xerox DocuPrint C2535 A Colour Laser Printer

- Black Print Speed 35ppm
- Colour Print Speed 25ppm
- Memory Size 128MB upgradeable to 640MB
- Max Duty Cycle up to 90,000ppm
- Resolution Up to 1200 x 1200 dpi
- Paper capacity 700 sheets Std / 2350 Max



**Our Price** **\$2959** **Save \$556**  
WebCode FXP2535

## Fuji Xerox Phaser 7300 A3 Colour Office Printer

- First page out 16 seconds colour, and 13 seconds black and white
- Print speeds of up to 30 ppm colour and 37 ppm black and white
- 500 MHz processor, 192MB Std upgradeable to 512MB of RAM.
- Monthly duty cycle of 83,000 pages, up to 2400 dpi



**Our Price** **\$7838** **Save \$955**  
WebCode FXP7300

## Konica Minolta Magicolor® 2430DL

Imagine a compact colour laser printer that everyone can share! While workgroups can benefit from cost effective colour printing with the magicolor 2430DL. It is exceptionally easy to use and integrates direct photo print for fast and easy printout of pictures. With revolutionary engineering and stylish design, the magicolor 2430DL is a welcome addition to any networking environment.

- Memory: 32 MB RAM
- Warm-up time: 49 seconds
- Print Speed: 5 ppm colour (A4/letter), 20 ppm monochrome (A4/letter)
- Print Quality: Superior resolution 2400 x 600 dpi, High Quality Polymerised toner
- Standard Interfaces: Ethernet 10/100 BaseTX & USB 2.0, Supporting Microsoft® 'Plug and Play'
- Paper size and input: Standard 200-sheet multipurpose feeder
- Operating System Compatibility: Windows 98SE/ME/2000/XP, MAC, LINUX
- Warranty: 2 year on-site warranty
- Direct Photo Print: Print photographs without a PC



**Our Price** **\$808** **Save \$91**  
WebCode QMS2430

## Konica Minolta PagePro 1300W

The PagePro 1300W is compact reliable and fast and ideal for both the home and the office. The PagePro 1300W prints 16ppm, and at approx 2cents per page it is also value for money.

- Paper size A4
- Print speed 16 ppm
- Paper input 150 sheets
- Paper output 100 sheets
- Print resolution 1200x1200dpi
- Memory 8 MB std
- Standard Parallel and USB
- Warranty: 3 year replacement, including drum.



**Our Price** **\$224** **Save \$25**  
WebCode QMS1300

## Konica Minolta Magicolor® 5440DL

The 5440DL has colour printing speeds faster than most monochrome printers and comes standard with networking capabilities. The 5440DL, as all Konica Minolta printers uses polymerized toner and most importantly is value for money!

- Up to 27 ppm colour & mono
- 64mb RAM, upgradeable
- Support for Windows, XP, MAC OS LINUX
- Standard input tray of 500 sheets



**Our Price** **\$1871** **Save \$463**  
WebCode QMS5440



### Epson EPL-6200L

- 600 x 600 dpi
- 20ppm black
- 32MB RAM, Up to 128MB RAM
- 150 sheet tray, Optional 500 sheet tray
- Parallel/USB
- Win/Mac



**Our Price \$347** **Save \$71**

WebCode EPL6203

### Epson Colour AL-C1100

- 600 x 600 dpi
- 25ppm black, 5ppm colour
- 32MB RAM, Up to 256MB RAM
- 180 sheet tray, Optional 500 sheet tray
- New EPSON AcuBrite toner
- Parallel/USB
- Win/Mac



**Our Price \$711** **Save \$147**

WebCode EPL1101

### Epson Colour AL-C1100N

- 600 x 600 dpi
- 25ppm black, 5ppm colour
- 32MB RAM, Up to 256MB RAM
- 180 sheet tray, Optional 500 sheet tray
- New EPSON AcuBrite toner
- Parallel/USB
- Networkable
- Win/Mac



**Our Price \$800** **Save \$179**

WebCode EPL1113

### Lexmark E230 Mono Laser Printer

- 600 X 600dpi
- 17ppm black
- 8MB RAM
- 250 sheet tray
- Parallel & USB 2.0
- Win/Mac



**Our Price \$176** **Save \$131**

WebCode LEX9230

### Epson Colour AL-C3000N

- 600 x 600 dpi
- 24ppm colour & monochrome
- 64MB RAM
- 133 MHz
- 100 sheet multi-purpose tray
- USB (2.0 compatible) / Ethernet
- Networkable
- Win/Mac



**Our Price \$1914** **Save \$396**

WebCode EPL3000

### Epson EPL-N3000

- 600 x 600 dpi
- 34ppm black
- 64MB RAM
- 150 sheet multi-purpose tray
- Parallel/USB
- Networkable
- Win/Mac



**Our Price \$2086** **Save \$433**

WebCode EPL3006

### Epson Colour AL-C4100

- 600 x 600 dpi
- 24ppm Monochrome & Colour
- 64MB RAM
- 400 MHz RISC + dedicated ASIC
- 100 sheet multi-purpose tray
- Parallel/USB
- Win/Mac



400 MHz RISC processor with dedicated ASIC processor.

**Our Price \$3090** **Save \$639**

WebCode EPL4103

### HP LaserJet 1015

- 600 x 600 dpi
- 14ppm black
- 8MB RAM
- 150 sheet tray
- Parallel/USB
- Win/Mac



**Our Price \$377** **Save \$88**

WebCode HPL2462

### HP LaserJet 1320

- Prints up to 22 ppm
- 1200 x 1200 dpi resolution
- 16MB expandable to 144MB
- Input tray - 250 sheets
- Up to 10,000 pages per month duty cycle
- 1 USB 2.0 port



**Our Price \$673** **Save \$162**

WebCode HPL5927

### HP Colour LaserJet 2550N

- 600 x 600 dpi
- 12ppm black, 4ppm colour
- 64MB RAM
- Up to 875 sheet input
- Ethernet ready
- Win/Mac



**Our Price \$1370** **Save \$334**

WebCode HPL3704



**Our Price \$681** **Save \$308**

WebCode LEX9510

### HP LaserJet 4250

- 1200 x 1200 dpi
- 43 ppm black
- 68MB RAM
- 600 Sheet Input
- Parallel/USB
- Ethernet Optional
- Win/Mac

HP 4250DTN (HPL5403) \$3217



**Our Price \$1652** **Save \$382**

WebCode HPL5400

### HP Colour LaserJet 3700

- 600 x 600 dpi
- 16ppm black & colour
- 64MB RAM
- Up to 350 sheet input
- Parallel/USB
- Win/Mac

HP 3700DN (HPL1323) \$3586



**Our Price \$2575** **Save \$604**

WebCode HPL1321

### HP Colour LaserJet 5500DN

- 600 x 600 dpi
- 27ppm Black & Colour
- 160MB Memory
- 600 Sheet Input
- A3 Printing Capacity
- Win & Mac



**Our Price \$7273** **Save \$1681**

WebCode HPL3715

### Lexmark T430 Mono Laser Printer

- 1200 x 1200dpi
- 30ppm black
- 32MB RAM
- 250 sheet tray
- Parallel & USB 2.0
- Win/Mac



**Our Price \$1014** **Save \$184**

WebCode LEX1430

## HP Papers

- A4 Everyday Photo Semi Gloss 170gsm 100 Sheets (HPD2511) **\$19**

## Canon Papers

- A4 High Resolution 110gsm 20 Sheets (CAN0068) **\$13**
- 50 Sheets (CAN0080) **\$33**

- A3 High Resolution 110gsm 20 Sheets (CAN0111) **\$10**
- 100 Sheets (CAN0112) **\$42**

## Kodak Papers

- 4" x 6" Picture Paper 20 Sheets (KOD4822) **\$10**

- 4" x 6" Premium Picture Paper 75 Sheets (KOD6004) **\$32**

- A4 Everyday Picture Paper 165gsm 20 Sheets (KOD6695) **\$10**
- 100 Sheets (KOD3293) **\$35**

- A4 Picture Paper Glossy 190gsm 25 Sheets (KOD5448) **\$15**
- 75 Sheets (KOD5449) **\$33**

- A4 Premium Picture Paper Glossy 220gsm 50 Sheets (KOD5283) **\$33**

- A4 Premium Picture Paper Satin 220gsm 15 Sheets (KOD5743) **\$15**
- 50 Sheets (KOD5679) **\$33**

- A4 Premium Picture Paper Glossy 220gsm 15 Sheets (KOD5743) **\$15**
- 50 Sheets (KOD5679) **\$33**

- A4 Premium Picture Paper Satin 220gsm 15 Sheets (KOD5743) **\$15**
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- A4 Premium Picture Paper Satin 220gsm 15 Sheets (KOD5743) **\$15**
- 50 Sheets (KOD5679) **\$33**

## HP Photosmart 375

Experience the freedom of portable photo editing and printing. Thanks to its integrated multi-slot memory card reader and colour graphic display, it's easy to print directly from your camera's memory card – just slot, edit and print. You can add fun borders to a favourite photo or even print video clips. And thanks to its ultra-compact design and optional battery pack, taking the printer everywhere is easy. Simply the ideal photo printer for all your photo printing needs.

- True-to-life 4R photos
- Print photos on-the-go
- 2.5" colour graphic display - Select and edit photos with the large LCD screen. Adjustable for tilt-angle, this screen remains crisp and clear from any angle.
- Multi-slot memory card reader - Supports CompactFlash™ Type I and II, SmartMedia™, Memory Stick®, Secure Digital™/MultiMediaCard™ and XD-Picture Card™.
- On-printer editing functions
- Video action printing
- PictBridge compatibility
- Page layout button



**Our Price \$347** **Save \$79**  
WebCode: HPP3419

## HP PSC 1610 All in One Printer

With an integrated multi-slot memory card reader and PictBridge compatibility, you can now print photos directly from your all-in-one.

- Print**
  - Up to 4800-optimised dpi colour
  - HP PhotoREt 4 Colour Layering Technology
  - HP PhotoREt 4 Colour Layering Technology (with optional 6-ink colour printing)
  - Up to 1200-rendered dpi black when printing from a computer
- Print method:** HP Thermal Inkjet printing
- Language:** HP PCL Level 3 enhanced
- Duty cycle:** Up to 3000 pages per month
- Scan**
  - Up to 1200 x 4800 dpi optical resolution (Up to 19200 dpi enhanced)
  - Up to 48-bit colour
- Flatbed**
- Copy**
  - Copy Black copy speed 3: Up to 23 cpm
  - Colour copy speed 3: Up to 18 cpm
  - Colour copy resolution: Up to 1200 x 4800 dpi
  - Reduction/enlargement: 50 - 400%
  - Maximum copies: Up to 50 copies
- Copier settings: Stand-alone copying



**Our Price \$182** **Save \$47**  
WebCode: HPSS587

## HP OfficeJet 7210

The HP OfficeJet 7210 all-in-one is designed to deliver professional-quality results and fast performance. Its networking capability allows high performance tools to be shared across up to 5 computers.

- Print**
  - Up to 4800-optimised dpi colour
  - Up to 1200-rendered dpi black
  - Duty cycle: Up to 5000 pages per month
  - Black Text Up to 30ppm Up to 8.8ppm Up to 2.1ppm
  - Colour Graphics Up to 20 ppm Up to 5.7 ppm Up to 2.1 ppm
- Fax**
  - 33.6 Kbps fax modem
  - Up to 3 seconds/page at 33.6 Kbps, 110 speed dial; 130 page memory
- Fax features include:** Auto fax reduction, auto redialing, speed dialing, PC fax send, optional two-sided faxing
- Scan**
  - Up to 2400 x 4800 dpi hardware resolution
  - Up to 48-bit colour
- Flatbed with duplex Automatic Document Feeder**
- Copy**
  - Copy Black copy speeds: Up to 30 cpm
  - Colour copy speeds: Up to 20 cpm
  - Colour copy resolution: Up to 4800 x 1200 dpi



**Our Price \$550** **Save \$109**  
WebCode: HPSS575

Visit [www.csw.com.au](http://www.csw.com.au) to view our full range of Printers!

## Lexmark X6170

**Colour Printing:** Up to 4800 x 1200 dpi on all paper types. Up to 19 ppm black; up to 15 ppm colour

**Colour Scanning:** It offers an effective scan area of 8.5" x 11.7". This high-resolution scanner captures the finest detail, with up to 1200 x 4800 dpi optical resolution (up to 19,200 enhanced) and 48-bit colour scan/16-bit grayscale.

**Colour Copying:** Reduction/enlargement capability from 25% to 400%. 1-99 copies at one time. The Lexmark X6170 produces up to 16 ppm black and up to 11 ppm colour.

**Colour Faxing:** 33.6 Kbps fax capability. Automatic document feeder lets you fax multiple page documents.

**Accu-Feed:** Paper handling system virtually eliminates paper jams.

**Bundled software:** ABBYY FineReader 5.0 Sprint Plus Optical Character Recognition - FineReader converts scanned paper documents into editable computer files.



**Our Price \$255** **Save \$44**  
WebCode: LEX6170

## Lexmark P6250

**Print, Copy, Scan, reduce and enlarge photos and documents.** Share your scanned photos by email or easily print them. A 2.5" (63.5mm) colour screen and 4" x 6" photo scan guides make placement and previewing of photos easy.

**Brilliant 6-colour 35mm quality photos:** Borderless photos in sizes A4, A5, A6, Letter, Hagaki, 3.5" x 5", 4" x 6", 5" x 7", L and 2L up to 4800 dpi on Photo paper; 6-colour 4" x 6" photos as fast as 38 seconds when printing in QuickPrint mode and excluding PC processing time.

**Quickly print photos without a PC** using the PictBridge digital camera interface or your digital camera memory card.

**Supports CompactFlash Type I & II, Memory Stick, Memory Stick Pro, Memory Stick Duo with adapter, Multi Media, Secure Digital, SmartMedia, Microdrive and xD cards**

**Prints up to 15 ppm colour and up to 22 ppm black with the optional Lexmark black cartridge**

**Accu-Feed:** Paper handling system virtually eliminates paper jams.



**Our Price \$329** **Save \$70**  
WebCode: LEX6250

## Lexmark X7170

With the Lexmark Productivity Suite, you can manage, organise and search documents with ease; scan and edit documents or printed material (using included ABBYY FineReader Optical Character Recognition (OCR) Software); and easily convert documents to PDFs.

**Print fast** with up to 22 ppm black & white and up to 15 ppm colour printing; with high quality printing up to 4800 dpi on photo paper.

**Distribute Multi-page faxes and emails;** fax quickly with 1-touch; hot buttons and 33.6 Kbps

**Enable easy sending** of electronic documents with these functions: Up to 100 page memory, 79 speed dials and 20 group dials capability; 5 quick dial buttons on the operator panel; Auto redial; Busy redial; Caller ID and distinctive ring detection (where available); Fax forwarding and print, Confirmation, error and activity reports, Broadcast and delayed transmission, Junk fax block (where available), Integrated print to fax function, Auto answering.



**Our Price \$337** **Save \$62**  
WebCode: LEX7170

## Epson Multi-Function Machine Stylus Photo RX430

With its high quality photo printing, scanning and copying features, the EPSON STYLUS PHOTO RX430 is an incredibly cost effective and space efficient tool for today's photo enthusiasts. It's designed to take full advantage of the wide range of Genuine EPSON Photo Papers; users will be able to enjoy printing economical, professional photos. The EPSON STYLUS PHOTO RX430 combines the most wanted features in one compact space saving unit. Not only do you receive a high quality scanner, photo copier and fast printer in one unit, but you also get a high quality photo-printing centre.

- Integrated Memory Card Slots
- Up to 15ppm in black and colour text
- BorderFree printing up to A4
- 4 Individual Ink Cartridges
- Flatbed colour image scanner
- Pixel Depth 48bit
- 1200 x 2400 Optical dpi
- Fast Mono and Colour copying
- USB 1.1 interface



**Our Price \$219** **Save \$40**  
WebCode: EP0430

## Epson Multifunction Machine Stylus Photo RX510

The RX510's superb print quality is made possible by use of Epson's proprietary MicroPiezo and Variable Sized Droplet Technologies. With a print resolution of 5760 x 1440 Optimised dpi (using Resolution Performance Management) and a scanning resolution of 2400 x 4800dpi, the RX510 is able to reproduce the finest details of all your photos.

- Printing - colour printing at resolutions up to 5760 Optimised and up to 17ppm in black text.
- Print BorderFree edge-to-edge 100 x 150mm & A4 prints.
- Scanning - 48-bit colour depth scanning with optical resolution of 2400 x 4800dpi. Full A4-size (216 x 297 mm) size capability.
- Faxing - Using your existing PC and modem, take full advantage of your existing fax software



**Our Price \$364** **Save \$65**  
WebCode: EP0510

## Epson Multi-Function Machine Stylus Photo RX630

Epson's Stylus Photo RX630 is the Multi Functional Printer with outstanding photo printing, scanning and photocopying. Underpinning the EPSON STYLUS PHOTO RX630's outstanding photo printing is its 5760 x 1440 Optimised DPI using Resolution Performance Management Technology. With the in-built 2.4 inch LCD view monitor and easy-to-use control panel, scanned and memory card-stored images can be previewed, cropped and printed without connection to a PC.

- 5760 Optimised DPI
- Up to 17ppm\* for black text, and up to 16ppm\* for colour text
- BorderFree printing up to A4
- High quality film and slide scanning
- Make Mono and Colour copies
- Copy photo with restoration
- 2.4" High Resolution LCD View Screen
- USB 2.0 hi-speed
- Optional Bluetooth adaptor available



**Our Price \$515** **Save \$7.50**  
WebCode: EP0630

## Consol USB Cables

- Consol 2 mtr USB 2.0 Peripheral cable type A male-B male - 480Mbps (COM830) \$11
- Consol 3 mtr USB 2.0 Peripheral cable type A male-B male - 480Mbps (COM835) \$14.30
- Consol 5 mtr USB 2.0 Peripheral cable type A male-B male - 480Mbps (COM840) \$19.80



## Consol Firewire Cables

- Consol 2mtr IEEE1394 FireWire Cable - 4 pin to 4 pin (COM6105) \$17
- Consol 4.5mtr IEEE1394 FireWire Cable - 4 pin to 4 pin (COM6110) \$24
- Consol 2mtr IEEE1394 FireWire Cable - 6 pin to 4 pin (COM6120) \$16
- Consol 4.5mtr IEEE1394 FireWire Cable - 6 pin to 4 pin (COM6125) \$23
- Consol 2mtr IEEE1394 FireWire Cable - 6 pin to 6 pin (COM6130) \$18
- Consol 4.5mtr IEEE1394 FireWire Cable - 6 pin to 6 pin (COM6135) \$25



Image used for illustration purposes only

## Consol Ethernet Patch Cables

- Consol 1 mtr RJ45 Cat5 Enhanced patch cable - Blue (COM7770) \$7
- Consol 5 mtr RJ45 Cat5 Enhanced patch cable - Blue (COM7905) \$15
- Consol 15 mtr RJ45 Cat5 Enhanced patch cable - Blue (COM7995) \$30
- Consol 20 mtr RJ45 Cat5 Enhanced patch cable - Blue (COM8005) \$39



**We Stock CAT5 Cables**  
Image used for illustration purposes only

Visit [www.csw.com.au](http://www.csw.com.au) to view our full range of Printers!

## Canon Pixma MP110 All In One Printer

The PIXMA MP110 combines an extremely fast 4800 x 1200 dpi printer, stand-alone photo and precise scanner, all-in-one stylish body. The MP110 also features borderless, full-bleed printing and copying on A4, 5" x 7" and 6" x 4" paper.

- Quality print, copy, scan made simple
- 2 picolitre FINE print-head technology results in sharp and enhanced detail for superb images
- Produce high-definition photos and documents at up to 4800 x 1200 dpi
- Print at up to 18 ppm black and 13 ppm colour
- Copy at up to 16 ppm black and 10 ppm colour
- Scan high-definition prints at up to 1200 x 2400 dpi (9600 dpi optimised)
- Feature the Advanced 2-Lid for convenient scanning and copying of thick documents
- Create true borderless 6" x 4", 5" x 7" and A4 size photos
- Comes with loads of software including Easy-PhotoPrint, EasyWebPrint, ArcSoft PhotoStudio and ScanSoft OmniPage SE



**Our Price \$143** **Save \$16**  
WebCode: CAN0385

## Canon Pixma IP3000 Colour Inkjet Printer

The PIXMA IP3000 Bubble Jet printer is the all-round, affordable home or home office printing solution. It is capable of handling a variety of printing needs from fast document printing at up to 22 ppm black and 15 ppm colour to high quality, borderless photo prints.

- High quality photo printing and advanced paper handling
- 2 picolitre FINE (Full-photonography Inkjet Nozzle Engineering) Technology
- Dual paper path (ASF & front cassette)
- Built-in automatic duplexing for double sided printing
- PictBridge and Bubble Jet Direct compatible - digital camera printing
- Up to 4800 x 1200 dpi printing resolution
- Prints true borderless photos up to A4
- Prints directly onto printable surface CD and DVD
- Cost saving 4 individual ink tanks



**Our Price \$220** **Save \$29**  
WebCode: CAN0313

## Canon Pixma MP780 All In One Printer

- High performance printer, copier, scanner & fax.
- 2 picolitre FINE (Full-photonography Inkjet Nozzle Engineering) print-head technology and up to 4800 x 1200 dpi printing
- Print and copy up to 25 ppm black and 17 ppm colour
- Scan at up to 2400 x 4800 dpi (9600 dpi optimised)
- Convenient 35 page Auto Document Feeder (ADF)
- Dual paper path with Auto Sheet Feeder (ASF) and front cassette
- Built-in automatic duplex unit for convenient double-sided printing
- PictBridge and Bubble Jet Direct compatible - digital camera printing
- Prints directly onto printable CDs & DVDs
- Super G3 (3.5 & 4.5 Kbps modem) up to 3 seconds per page faxing
- Easy-to-use display and operation panel
- ContrastPLUS 5-colour individual ink system



**Our Price \$517** **Save \$82**  
WebCode: CAN0362



Canopus Let's  
EDIT 2

Capture home movies, edit them with real-time special effects and burn to DVD. Easy-to-use video editing software with movie-style effects and DVD-Video authoring. Breakthrough real-time operation dramatically speeds up the editing process, as there is no rendering or waiting while creating movies with sophisticated special effects.



**Our Price \$242** **Save \$7**  
WebCode CP50021

Canopus Let's  
EDIT RT 2

Capture video from any analog device, such as a VHS deck or Hi8 camcorder, and edit the footage with Let's EDIT 2 software. Featuring the same proprietary DV code chip and locked audio technology found in the Canopus ADVC product line, providing unmatched image quality and perfect audio/video synchronization when converting analog video to digital video. Perfect for converting analog footage to digital and creating DVDs from old videotapes.



**Our Price \$550** **Save \$49**  
WebCode CP50022

Canopus Let's  
EDIT RT+ 2

In addition to the features of Let's EDIT RT 2, Let's EDIT RT+ 2 also features analog video output, which provides video output connectivity to a monitor or television while editing, and also to VHS and Hi8 VCRs and cameras. The native OHCI design with analog video support, offers the widest compatibility with video cameras, decks and even other video editing and authoring software applications.



**Our Price \$749** **Save \$50**  
WebCode CP60023

Hauppauge  
Nova-T USB2

High Definition (HD) and Standard Definition (SD) reception via external USB2 hardware. Record to disk and playback digital TV, very high quality picture and sound schedule, TV recording for later viewing, burn television programmes to DVD (requires DVD burning software).



**Our Price \$209** **Save \$20**  
WebCode HAU0019

## Hauppauge Nova T

The Nova T is a High and Standard Definition (HD/SD) Digital TV PCI tuner card. The Nova T offers the most incredible picture quality available on a PCI tuner card. Digital TV programs can be viewed live, pausetimedshifted or recorded to hard drive in their full digital quality without any loss. These can then be archived to DVD.



**Our Price \$253** **Save \$16**  
WebCode HAU0014

## Hauppauge TV Express

Watch live TV or Schedule your recordings. Snap and print stills from whatever you're watching. Or record video clips from your camcorder or off the air to create your own high-impact presentations. The digitized TV image is sent directly into the memory of your PC's VGA card without creating overhead for the CPU. So you can work on applications while simultaneously watching TV in a resizable window.



**Our Price \$88** **Save \$11**  
WebCode HAU0017

## Hauppauge TV Tuner Cards

Bringing TV and broadcast data to your PC



WebCode	Product Description	Interface	Audio	FM Radio	HW MPEG Recorder	Remote Control	S-Video In	Video In	Audio In	Price
A. HPG0002	WinTV-PVR-350	PCI	DBX Stereo	Yes	Up to 12MBits/sec	Yes	Yes	Yes	Yes	\$484
B. HPG0001	PVR-150	PCI	DBX Stereo	No	Up to 12MBits/sec	Yes	Yes	Yes	Yes	\$279
C. HAU004	WinTV-USB2	USB2	Mono	Yes	Up to 12MBits/sec	Yes	Yes	Yes	Yes	\$209
D. HAU0013	PVR-USB2	USB2	Stereo	Yes	Up to 12MBits/sec	Yes	Yes	Yes	Yes	\$506

## Dvico Fusion HDTV USB2

Watch & record HD digital TV on your desktop or notebook PC. Portable, external USB 2 device. Record in DVD quality & burn to DVD. Pause & replay live TV with Timeshifting. Supports Electronic Program Guide (EPG). Convert HDTV to MPEG4 format. Includes IR remote control & software.



**Our Price \$279** **Save \$20**  
WebCode DVC0013

## Dvico Fusion HDTV Lite

Watch & record high definition digital TV on your PC. Experience premium picture quality with surround sound audio on your 5.1 compatible sound system. Record in DVD quality for editing and burning to DVD. Includes IR remote control. Compatible with Microsoft MCE2005.



**Now compatible with Microsoft Media Centre 2005!**  
**Our Price \$176** **Save \$23**  
WebCode DVC0004

## Dvico Fusion HDTV Plus

Watch & record HD digital TV on your PC. Exceptional picture quality with surround sound audio on your 5.1 compatible sound system. Record in DVD quality for editing and burning to DVD. Pause & replay live TV with timeshifting. Capture analogue video. Includes IR remote control. Compatible with Microsoft MCE2005.



**Now compatible with Microsoft Media Centre 2005!**  
**Our Price \$219** **Save \$30**  
WebCode DVC0005

Pinnacle Moviebox  
Deluxe 9 Plus

A complete video capture and editing solution for the PC. An easy-to-connect, external USB 2.0 device, MovieBox Deluxe supports both digital and analog camcorders and VCRs. Includes an external USB-2 analogue to digital video converter to capture your movies from any videotape.



**Our Price \$649** **Save \$50**  
WebCode PIN0093

Pinnacle AV/DV  
Deluxe 9 Plus

Pinnacle Studio AV/DV Deluxe version 9 contains Pinnacle Studio Plus, a PC video editing solution, a PCI analog and digital video capture card, and a professional quality video breakout box for easy connection of any type of camcorder. Packed with incredible video editing, restoration and DVD authoring features, Pinnacle Studio AV/DV Deluxe will help make your home movies the best they can be.



**Our Price \$528** **Save \$47**  
WebCode PIN0092

Pinnacle  
ShowCenter 200

The ShowCenter 200 from Pinnacle lets you easily stream your favorite high-quality digital photos, music and movies from your PC to your television and home stereo system. It combines top-notch audio and video quality, including HD photo and video support, with an intuitive user interface for an incredibly convenient and engaging entertainment experience.



**Our Price \$550** **Save \$49**  
WebCode PIN0109



## Microsoft Wireless Notebook Optical Mouse

- Snap-in receiver cuts the battery when not in use
- Optical technology for precision and speed
- Scroll Wheel to move through documents quickly
- Designed for comfort for either hand
- Longer battery life



Blue  
Our Price **\$61** Save **\$8**  
WebCode MST8354

State  
Our Price **\$61** Save **\$8**  
WebCode MST8353

## Microsoft Standard Wireless Optical Mouse

- Long Battery Life - Many users average more than six months battery life
- 3 Button mouse
- Optical Technology for speed and precision
- Designed for comfort for either hand
- USB/PS2



Black  
Our Price **\$39** Save **\$10**  
WebCode MST8342

White  
Our Price **\$39** Save **\$10**  
WebCode MST8341

## Microsoft Wireless Optical Mouse

Wireless Optical Mouse (Steel Blue) is a cut above the rest in wireless performance, comfort and style. This optical mouse is equipped with 3 buttons, a tilt wheel and a scroll wheel to guide you around any software programme with ease. Improved battery consumption technology for extended life.



Our Price **\$55** Save **\$15**  
WebCode MST8289

## Microsoft Optical Desktop with Fingerprint Reader

- Fingerprint Reader for Convenient Password Replacement
- Optical Mouse with Tilt Wheel Technology
- Longer Mouse Battery Life
- Multimedia Centre - Control your media activities with the touch of a button



Our Price **\$152** Save **\$48**  
WebCode MST8351

## Microsoft Wireless Optical Desktop Comfort Edition

Features a new Curve Design which provides enhanced comfort in a flat keyboard. The Zoom Slider allows you to zoom in and out of images on-screen. Gain instant access to your favourite Web sites and files with the keyboard "My Favourites" Keys. The wireless optical mouse has a longer battery life, as well as Tilt Wheel Technology for side-to-side and down scrolling.



Our Price **\$115** Save **\$35**  
WebCode MST8340

## Microsoft Wireless Desktop 1000

- Wireless Freedom—No cords
- Optical Technology for Precision Accuracy and Speed
- Enhanced F Keys—Perform common commands from your keyboard
- Customisable Hot Keys—Get one-touch access to the programs and files you use most



Our Price **\$70** Save **\$20**  
WebCode MST8356

## SanDisk Cruzer Micro

SanDisk Cruzer Micro is a small USB Flash Drive that connects to a computer's USB port. Users can easily store their key documents, pictures, music and videos on a Cruzer Micro and transfer them to another computer with a USB port.

### Micro Cruzer

512MB (SIM0688) **\$75**  
1GB (SIM0436) **\$143**  
2GB (SIM0434) **\$286**

### Mini Cruzer

256MB (SIM0381) **\$49**  
512MB (SIM0386) **\$75**  
1GB (SIM0391) **\$136**



256MB  
Our Price **\$45** Save **\$19**  
WebCode SIM0121

## SanDisk Titanium 512MB

The 512MB Cruzer Titanium is designed to meet the needs of business and power users who place a premium on high durability and fast data transfers. SanDisk Cruzer Titanium is perfect for storing and transporting documents, pictures, presentations and music - anytime, anywhere, and under any conditions.

1GB (SIM0151) **\$176**  
2GB (SIM0150) **\$363**



Our Price **\$99** Save **\$47**  
WebCode SIM0393

## SanDisk 256MB Digital Audio Player

The new Digital Audio Players combine crystal-clear sound with a sleek design and sport a three-button/one-joystick design and easy-to-navigate user interface. They feature MP3, Windows Media® file and Windows Media-based DRM file playback, FM radio and voice recording. Doubles as a USB data storage device.

Blue 512MB (SIM0158) **\$189**  
Silver 1GB (SIM0157) **\$249**



Our Price **\$129** Save **\$20**  
WebCode SIM0159

## SanDisk ImageMate 5-in-1 Card Reader/Writer

Transfer all your pictures with the touch of a button! SanDisk offers super-fast single slot card readers for a variety of popular flash memory cards. Available for all standard card formats.

Compact Flash Reader/Writer (SAN0016) **\$30**

ImageMate 12-in-1 Reader/Writer (SIM0160) **\$55**



Our Price **\$30** Save **\$5**  
WebCode SAN0015

## SanDisk Sansa 1GB MP3 Player

High quality digital music playback with easy navigation and expandable memory at an affordable price. You can add up to 2GB of additional storage space with the SD slot. It also includes an FM tuner and superior sound with SRS WOW and high-quality, in-ear headphones.



Our Price **\$299** Save **\$50**  
WebCode SAN0018

## SanDisk Photo Album with Remote

The SanDisk Photo Album now makes it simple, convenient and affordable to view, store and share your favorite digital photos, video clips and friends on your TV. No computer is required! Family and friends no longer have to crowd around a computer or your camera's LCD screen to view photos.

Stores Images permanently on Compact Flash - ask about our range of CF cards!



Our Price **\$88** Save **\$8**  
WebCode VME0005

## Logitech Precision PC Gaming Headset

For the gamer with attitude. Big 40mm neodymium stereo headphone drivers give you the audio experience you've been looking for, and its noise canceling microphone delivers the voice quality you demand.



Our Price **\$31** Save **\$19**  
WebCode LOG3457

## Logitech Cordless Desktop EX-110

The Cordless Desktop EX 110 makes it incredibly easy and affordable to go cordless-in style. Quick, simple to set up, and completely reliable. Enjoy the freedom and precision of an 800-dpi optical mouse, plus one-touch controls that make music, internet, and other frequent functions simple. Superb quality and value.



Our Price **\$55** Save **\$33**  
WebCode LOG3507

## Logitech Quickcam Sphere

QuickCam Orbit is designed to turned heads. The mechanical pan and tilt feature allows the webcam to turn side and side to give you 180° field of view, and tilts up and down 60°. Face-tracking software will automatically follow you to keep you in view. It even zooms in so you can clearly see the details. It's easy to add live video to all your IM sessions.



Our Price **\$181** Save **\$69**  
WebCode LOG3494

## Comsol ServerLink Star 2 Port KVM

Control two PCs with a single keyboard, monitor & mouse. All ServerLink Star KVM switches have audio and microphone support for multimedia applications.

SL-271-P (COM0075) **\$77**

SL-271-U (COM0076) **\$88**



SL-271-C  
Our Price **\$79** Save **\$6**  
WebCode COM0077

## Comsol ServerLink Slim Desktop KVM

ServerLink Slim Desktop KVM The ServerLink Slim Desktop KVM Switch is designed to let you control two or four PS/2 style computers using one keyboard, monitor and mouse. With its slim size and ease of operation, it is an indispensable device for managing multiple PCs on your SOHO or Corporate desktop. Its compact and lightweight design fits comfortably anywhere on your desktop.

SL-281-P (COM0094) **\$105**



**Cables Included**

4 Port  
Our Price **\$175** Save **\$24**  
WebCode COM0095

## Comsol VGA Monitor Splitters

Simultaneously broadcast one VGA signal up to 8 different monitors can never be easier with Comsol's high-end video splitters. Comsol once again pushes the bandwidth to 350MHz for crisp clear video available with two, four and eight ports.

4 Port (COM9145) **\$195**

8 Port (COM9150) **\$255**



2 Port  
Our Price **\$107** Save **\$18**  
WebCode COM9140

## Comsol USB VoIP Phone

This fully featured USB VoIP Phone allows you to talk to friends or colleagues just like a normal telephone. Used in conjunction with Skype or similar software, it offers you a complete free Internet telephony solution. The UVP-001 features simple plug-and-play installation, integrated LCD and keypad, echo cancellation and noise reduction.

- Talk to friends or colleagues just like a normal phone
- Provides a complete free Internet telephony solution
- SKYPE ready - talk for free with other Skype users
- Works with most leading VoIP providers
- Independent use of phone and sound card allows for VoIP call whilst listening to music
- Make huge savings on local, STD and international calls
- Ideal for the mobile traveller
- Easy to install USB plug-and-play technology
- Allows PC-to-PC and PC-to-phone operation
- LCD display, keypad and ringer
- 10 programmable ring tones for incoming calls
- Echo cancellation and noise reduction
- Caller ID function of VoIP calls

Our Price **\$70** Save **\$19**  
WebCode COM0101



## Comsol USB 2.0 flashIT2 Flash Drives

These pocket USB 2.0 flashIT2 Storage Drives plug directly into any standard USB port and are compatible with both PC and Macs. They also feature password security control to prevent unauthorised access.

- Hi-Speed USB 2.0 Certified
- Password Security control
- True Plug and Play

128MB (COM0111) **\$25**

512MB (COM0107) **\$93**

1GB (COM0108) **\$165**

2GB (COM0109) **\$342**



256MB  
Our Price **\$57** Save **\$8**  
WebCode COM0106

## Comsol SD Card Reader plus MP3 Player

The SD-MP3 is a combined Hi-Speed USB 2.0 SD card reader and MP3 player. Just plug the SD-MP3 into the USB port of your PC or Mac, insert your SD storage card and transfer all your digital files by user friendly drag-and-drop. The built-in MP3 player allows you to listen to your favourite MP3 files, straight from your storage card, while on the move. The SD-MP3 comes complete with stereo earphones so now you can carry your digital files and music everywhere you go.

Storage card not included.

Our Price **\$44** Save **\$15**  
WebCode COM0103



## Comsol USB Bluetooth Adapter

A quick and easy solution for users wanting to add Bluetooth capability to their computer. It plugs directly into your USB port and enables wireless connectivity with Bluetooth devices including mobile phones PDAs printers and other computers.

- Bluetooth v1.2 certified
- WIDCOMM "Bluetooth for Windows" connectivity software
- Full-Speed Class 2 Bluetooth operation
- Ideal for mobile phones, PDAs, headsets, printers etc.
- Operation range up to 40m



Our Price **\$57** Save **\$12**  
WebCode COM0104

## Comsol USB 2.0 Card Reader 17 in 1

Exchanging data between your computer and Digital Camera, MP3, PDA etc. has never been so fast and convenient. Supporting almost all of the available storage cards including: SD, Mini SD, SD Ultra II, MMC 1, MMC 2, RSMMC, MicroDrive, CF I, CF II, CF-Ultra II, CF-Extreme, MS, MS Pro, MS Pro Duo, MS Pro (MG), MS Pro Duo (MG), TransFlash.

- Hi-Speed USB 2.0 Certified
- Transfer files by user friendly drag-and-drop
- Data can be exchanged between sockets
- Transfer speeds up to 480Mbps

Black (COM0502) **\$35**



Our Price **\$35** Save **\$14**  
WebCode COM0102

## Comsol 4 Port USB 2.0 Mini Hub

The UMH-402 Hi-Speed Mini Hub allows you to add 4 high-performance USB 2.0 peripherals to your notebook or portable computer. Designed for low powered devices, its ultra compact design makes it the perfect portable solution to extend your notebook's high-speed USB connectivity.

- Hi-Speed USB 2.0 Certified
- Ultra compact for portability
- Ideal for mobile notebook users
- Transfer speeds up to 480Mbps



Our Price **\$30** Save **\$5**  
WebCode COM0105

## Comsol USB 2.0 QuickLink Cable 5-in-1

The Comsol USB 2.0 5-in-1 QuickLink Cable ensures you will always have the right connection. Designed for the mobile traveller, the QuickLink cable provides you with 5 different USB cable configurations for all your USB peripherals.

- Detachable Connectors for added convenience
- Foil and Braid Shielding to reduce EMI/RFI interference
- Includes connector carry case for convenient storage



Our Price **\$28** Save **\$2**  
WebCode COM0072

### Belkin SurgeMaster

A power surge or lightning strike can destroy your electronic equipment in an instant. The SurgeMaster range offers the best protection for all your sensitive electronic devices in your home or office. No amount of thunder and lightning will ever be able to scare away your protection. Be safe and smart: choose a SurgeMaster with telephone/data line protection and if you want to protect your AV equipment with coaxial connection, choose the surge protector that protects both.

#### WebCode Product Description

WebCode	Product Description	Price	SAVE
BEL0244	Belkin Home Series Surge Cube	\$27	\$3
BEL0245	Belkin Home Series Surge Cube with Tel	\$35	\$5
BEL0247	Belkin Home Series 4-Way (2m Cord)	\$49	\$10
BEL0248	Belkin Home Series 4-Way (2m Cord) plus AV	\$66	\$13
BEL0250	Belkin Superior Series 6-Way (2m Cord) plus Tel	\$99	\$30
BEL0251	Belkin Superior Series 6-Way (2m Cord) plus Tel plus AV	\$115	\$34
BEL0253	Belkin Gold Series 7-Way (3m Cord) plus Tel plus AV plus RJ45	\$149	\$50
BEL0255	Belkin Gold Series 8-Way (2m Cord) plus Tel	\$129	\$30
BEL0256	Belkin Gold Series 8-Way (2m Cord) plus Tel plus AV	\$145	\$34



### Belkin Wireless Rechargeable Mouse

The Rechargeable Wireless Optical Mouse from Belkin provides advanced wireless mouse functionality along with the convenience of recharging from the base. Designed for comfortable right or left handed use.

**NEW**



#### Rechargeable

Our Price **\$60** Save **\$10**  
WebCode BEL9997

### Belkin Hi-Speed USB 2.0 7-Port Hub

Belkin's Hi-Speed USB 2.0 7-Port Hub features two top-loading downstream USB ports. Now you can enjoy fast access for temporary device connections such as USB thumb drives, media readers and for USB lights, fans and other accessories. Monitoring your device activity is simpler than ever with LEDs for master power status and on port activity.



Our Price **\$64** Save **\$15**  
WebCode BEL0263

### Belkin Wireless Keyboard & Optical Mouse

Uses digital radio technology to give you the luxury of using your keyboard and mouse anywhere within six feet of the receiver. No more cables to clutter your desktop. The mouse uses optical technology to deliver accurate signals from smooth, easy movements. Access the Internet and favorite applications using the seven multimedia keys and seven hot keys.



Our Price **\$55** Save **\$5**  
WebCode BEL0163

### HP Home Cinema Projector

- DLP technology
- Professional home cinema
- Flexible installation
- 840 ANSI lumens
- Native Resolution SVGA 800 x 600
- Scales up from VGA 640 x 480
- Scales down from XGA 1024 x 768
- Contrast ratio: 1600:1
- Weight 5.7kg



Our Price **\$2260** Save **\$468**  
WebCode HPP1577

### Sony DVD/VCR combo

The Irresistible SLVD985 VCR/DVD combination unit offers you all the features that you'd expect to find in DVD and VCR separate components. With DVD, DVD+RW+R, DVD-RW+R, JPEG, CD, SVCD, VCD, CD-RW and MP3 Playback, the SLVD985 combines convenience and advanced functionality for your viewing pleasure.



Our Price **\$317** Save **\$32**  
WebCode SNV0558

### Sony 6.1 Channel Home Cinema in a Box

- Power Output: 120W x 6
- Dolby Pro Logic / Pro Logic II / Dolby Digital EX / DTS ES, DTS Neo-6 decoding
- Multi brand Pre programmed remote control for controlling other components
- Front/rear satellite speakers
- Centre satellite speaker
- Active subwoofer



Our Price **\$1099** Save **\$100**  
WebCode SNV0425

### Purchase \$150 worth of Belkin iPod accessories^ and receive \$25 CASHBACK!

\*Not valid on Auto Power Kit (FBV7058-APL) or TuneCast II (FBV3080-APL). Valid between 1/6/05 and 31/8/05. Visit [www.belkin.com/anz](http://www.belkin.com/anz) for more details.

### Belkin TuneBase FM for iPod Mini

TuneBase FM offers an elegant way to use your iPod mini on the road. While mounted, your iPod mini charges and wirelessly plays audio through your FM radio. It works from any cigarette-lighter outlet.

**NEW**



#### Built in FM Transmitter

Our Price **\$122** Save **\$8**  
WebCode BEL0405

### Belkin Tunepower

The TunePower Rechargeable Battery Pack from Belkin keeps the music playing by letting you power your iPod-even when your internal battery is drained.

Works with all iPods with dock connectors; includes 3 sleeves for 10/15/20GB iPod, 30/40GB iPod, and iPod mini. Provides additional 8-10hrs battery life and includes firewire charging cable.

**NEW**



Our Price **\$1427** Save **\$28**  
WebCode BEL2808

### Belkin iPod Mini Silicon Rubber Sleeves 3 Pk

The Belkin silicon sleeves provide a great way to preserve your iPod. This value pack comes with 3 colours and a lanyard carrystrap. Available for iPod mini (shown), iPod Shuffle and 4g iPods.

**NEW**



Our Price **\$30** Save **\$10**  
WebCode BEL9996

### Belkin Complete Mobility Bundle

Belkin's Complete Mobility Bundle is designed to meet the needs of all mobile professionals. It represents a necessary addition to any notebook solution and includes the Belkin NE MC Notebook bag, miniskroller mouse and 4 port hub all in the one pack at a value price.

**HOT PRICE**



Our Price **\$65** Save **\$24**  
WebCode BEL2480

### Belkin USB Mobile Numeric Keypad

The Numeric Keypad from Belkin uses USB Plug-and-Play technology to offer notebook users the instant benefit of a 19-key, external, numeric keypad in a compact format optimal for the mobile professional.

**NEW**



Our Price **\$35** Save **\$5**  
WebCode BEL0365

### Belkin Mini USB Glo Mouse with Retractable Cord

The MiniGlow Optical Mouse from Belkin provides a fun and compact input solution for the mobile user. It features attractive color-changing lights that glow brightly, day or night. Take it on the road easily and use it with optical precision on virtually any surface anywhere you use your USB laptop.

**NEW**



Our Price **\$28** Save **\$11**  
WebCode BEL2826



**Thermaltake Big Typhoon**

Compatible with Intel P4 LGA 775 & AMD K7/K8. 6 Heatpipes allow quick transfer of heat. Copper base & High density aluminium fins provide more surface area for good heat dissipation



**Our Price** **\$70** **Save \$40**  
WebCode TTK0010

**Thermaltake BigWater Liquid Cooling System**

Universal 4 in 1 solution, compatible with Intel P4 socket 775, AMD K8, AMD K7. High performance radiator with blue LED acrylic cover & universal clips. Powerful DC 12V water pump. Transparent green pipes to light up your case. High performance coolant to steady water quality & reduce anti-freezing and anti-rusting.



**Our Price** **\$185** **Save \$20**  
WebCode ANY0174

**i-Rocks USB Keypad plus 2 Port Hub**

Compact and stylish USB numeric keypad. An ideal accessory for accountants, auditors or if you are tired of your cramped notebook keyboard. White, crystal like finish with a bonus integrated 2 port USB hub to attach a keyboard and mouse. Lightweight for easy storage and portability in your notebook bag.



**Our Price** **\$32** **Save \$8**  
WebCode IR50014

**Thermaltake Super Tower Aluminium Armor Case**

Supplied with new 430W Thermaltake power supply. Includes dual 12cm Blue LED fans in front. Stylish aluminium front bezel. 7 expansion Slots. Removable HDD cage. Tool-free installation for 5.25" devices. Relocatable front control panel (Power switch, Reset switch, HDD & Power LEDs). Screwless slots for easy assembly. 3 x 3.5" HDD Module with 12cm fan.



**Our Price** **\$299** **Save \$40**  
WebCode TTK0011

**Plantronics Stereo PC Headset**

Behind the Headset PC Headset with Microphone. Listen to CDs, DVDs or MP3 music in awesome full range stereo sound. Equipped with convenient inline volume and mute control and a quickdial microphone boom that ensures correct placement for speech applications. Lightweight headset with superior speech recognition microphone.



**Our Price** **\$49** **Save \$10**  
WebCode ANY0039

**i-Rocks Miniop USB Mouse**

A necessary notebook companion for every business traveller. Stylish design with precise accuracy of 800dpi resolution. Optical technology for functionality on many surfaces. Other features include Retractable cable for easy storage, adaptor for PS/2 or USB connection.

**Black (IR50008) \$19**  
**Red (IR50010) \$19**  
**Silver (IR50011) \$19**



**Our Price** **\$19** **Save \$10**  
WebCode IR50009

**i-Rocks MP3 CAR DJ FM Transmitter**

By plugging in your USB flash drive or mp3 player (or any audio source with an audio output like your PDA or CD player) into the mp3 DJ and then tuning to the specified FM channel, you can immediately enjoy listening to your favourite digital music over your car stereo.



**Our Price** **\$65** **Save \$15**  
WebCode IR50020

**Thermaltake Mid Tower Soprano Case**

Includes 400W Thermaltake power supply. High efficiency ventilation: Dual 12cm silent fan in front & rear, 9cm fan on side panel. Tool-Free when installing 5.25" & 3.5" devices. Dual USB 2.0, IEEE 1394 Firewire, Audio & Speaker ports. Retractable foot stand.



**Our Price** **\$176** **Save \$33**  
WebCode TTK0005

**Plantronics USB Stereo PC Headset**

Plantronics All-Purpose USB Stereo PC Headset with Microphone. Ultra-light weight, comfortable design. Perfect for all your multimedia needs. Listen to CDs, DVDs, or MP3s with digitally enhanced stereo sound. USB plug and play.



**Our Price** **\$85** **Save \$14**  
WebCode ANY0109

**i-Rocks Aluminium USB 2.0 12-in-1 Card Reader**

i-Rocks Aluminium USB 2.0 12-in-1 Card Reader with Blue LED - Silver. Supports CF I / CF II, Smart Media, MMC I / MMC II, SD\*, IBM Micro Drive, MStick, Mstick Pro, Mstick Duo\*, Mstick Pro Duo\*, Mini SD\*.

\*Adaptor Required



**Our Price** **\$35** **Save \$10**  
WebCode IR50013

**i-Rocks Hub/Reader Combo**

Combination 3 Port USB 2.0 Hub plus Memory Card Reader. Compact design for easy storage. Reads most memory card types and true plug and play/hot swappable for easy use and store away. Fast transfer rates with USB 2.0 of 480Mbps. Supplied with Carry bag.

**Black (IR50015) \$60**  
**Red (IR50017) \$60**  
**Silver (IR50018) \$60**



**Our Price** **\$60** **Save \$10**  
WebCode IR50016

**Thermaltake Super Tower Aluminium Kandalf Case**

Supplied with new 430W Thermaltake power supply. Aluminium front bezel. 7 expansion Slots. Removable HDD cage. Tool-free installation for 5.25" devices. Relocatable front control panel (Power switch, Reset switch, HDD & Power LEDs). Screwless slots for easy assembly. 3 x 3.5" HDD Module with 12cm fan. Accessory box bundled in 5.25" drive bay. Retractable foot stand.



**Our Price** **\$349** **Save \$50**  
WebCode TTK0012

**Plantronics Bluetooth Headset**

Perfect for the mobile professional. Wireless freedom and unparalleled versatility in the office and on the go. Simplify your communications with this extremely lightweight and versatile headset. Enjoy all-day wearing comfort, clear voice transmission and superior sound quality without wire! With the optional Despatcher, your headset can be used in the office or on the go.



**Our Price** **\$105** **Save \$44**  
WebCode ANY0188

**i-Rocks Brushed Aluminium 4 Port USB 2.0 Hub**

i-Rocks Brushed Aluminium 4 Port USB 2.0 Hub with Blue LED. Includes power adaptor. Small & compact. High speed transfer rate up to 480Mbps for each port - Silver.



**Our Price** **\$32** **Save \$7**  
WebCode IR50005

**i-Rocks 2.5" USB2.0 Aluminium HDD Enclosure**

i-Rocks 2.5" USB2.0 HDD Enclosure with aluminium alloy housing. Delivers 480 Mbps data transfer rate USB to IDE & 800Mbps IEEE1394b to IDE. Includes power/access status LED indicator. Easy installation with screwless design.



**Our Price** **\$33** **Save \$17**  
WebCode IR50019



## Sitecom NitroXM 140g+ Wireless Broadband Router

Transmission and Receiving station for wireless network up to 54 wireless Notebooks and PC's can connect. Can be used to share an internet connection via wireless. Includes an inbuilt 4 port 10/100 switch, connect extra PC's via network cables. Uses Sitecom Nitro XM 140g+ wireless standard when used with other Sitecom 140g+ products speeds of 45Mbps or higher can be achieved



**Our Price \$140** **Save \$29**  
WebCode: ANY0184

## Sitecom NitroXM 140g+ Wireless USB Adaptor

Allows you to connect your Notebook or Desktop PC to a Wireless Network via USB 2.0. Quick & Easy Installation. Share Photos, Music and Data wirelessly. Uses Sitecom Nitro XM 140g+ wireless standard.



**Our Price \$73** **Save \$16**  
WebCode: ANY0185

## Sitecom NitroXM 140g+ Wireless PCI Card

Allows you to connect your Desktop PC to a Wireless Network. Share Photos, Music and Data wirelessly. Uses Sitecom Nitro XM 140g+ wireless standard.



**Our Price \$60** **Save \$19**  
WebCode: ANY0186

## Sitecom NitroXM 140g+ Wireless Cardbus Card

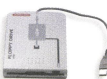
Allows you to connect your notebook to a Wireless Network. Share Photos, Music and Data wirelessly. Uses Sitecom Nitro XM 140g+ wireless standard.



**Our Price \$60** **Save \$19**  
WebCode: ANY0187

## Sitecom USB 3.5" Floppy Drive

The Sitecom USB 3.5" Floppy Drive can be used on Windows 98SE or higher and Mac OS 8.6 and Mac OS 9.x and higher. The USB Floppy Drive can read, write and format 3.5" disks.



**Our Price \$73** **Save \$12**  
WebCode: ANY0182

## Sitecom USB 2.0 to VGA Adaptor

Easily connect an extra monitor to any computer with a USB port. Even if you are using a notebook, the USB 2.0 to VGA adaptor enables you to enjoy the convenience of an extra monitor via USB at any location.



**Our Price \$119** **Save \$40**  
WebCode: ANY0088

## Sitecom Wireless Media Player

Wirelessly transfer from all WiFi PC's music and pictures and play them on your TV, home cinema set or stereo. Includes 5.1 audio and Dolby Digital. Compatible formats: DivX, MP3, MPEG4 & WMA. Includes wireless remote control.



**Our Price \$297** **Save \$52**  
WebCode: SIT0003

## Sitecom Bluetooth USB Adaptor

Class 2 10m. With the Bluetooth USB Adaptor you experience freedom in the widest sense! For you have in hand an extremely ingenious tool enabling you to exchange data through your mobile Bluetooth telephone or to exchange data between various PCs or notebooks with a Bluetooth USB adaptor.



**Our Price \$44** **Save \$15**  
WebCode: ANY0183

## Aten 2 Port KVM Switch

Utilize only 1 set of Keyboard, Monitor & Mouse to access multiple PCs or Servers. Ideal for technical workbenches for testing PCs, training on multiple OS or for multiple server admin and maintenance. CS-82/84A-desktop versions. PS/2 & VGA connections, cables supplied.

Aten 4 Port KVM Switch (ANY0135) \$150

Aten 8 Port KVM Switch- Rackmountable (ANY0136) \$490



**2 Port**  
**Our Price \$115** **Save \$5**  
WebCode: ANY0134

## Aten 2 Port Video Splitter 250Mhz

Ideal solution for training or presentation scenarios where you need to display what's on your monitor onto a Projector or another monitor. Supports XGA, SVGA, VGA and multisync monitors.

4 Port Video Splitter 250Mhz (ANY0138) \$77

8 Port Video Splitter 200Mhz (ANY0139) \$99



**2 Port Video Splitter 250Mhz**  
**Our Price \$55** **Save \$14**  
WebCode: ANY0137

## Aten 2 Port Peripheral Sharer Switch

Ideal for Small Office or Home Office with no existing network infrastructure, or for peripherals like printers that are not networkable. Share a single USB peripheral (printer/scanner) with either 2 or 4 computers. Sharing is exclusive to computer i.e. one-at-a-time basis.

Aten 4 Port Peripheral Sharer Switch (ANY0143) \$60



**2 Port**  
**Our Price \$45** **Save \$5**  
WebCode: ANY0142

## Compro VideoMate Hybrid Analog TV/Video & Digital TV Card

The First TV Tuner on The market that does both digital & analog.

- Full PC Power On/Off via remote.
- Full PC Power On/Off for scheduled recording.
- Low profile form factor.
- Windows Media Centre compatible.
- Picture Purifying technology for sharper pictures.
- Recommended by PC Authority. May 2005



**DVB-T3000**  
**Our Price \$149** **Save \$50**  
WebCode: ANY0180

## AL Tech MediaGate 3.5" Hard Disk Media Player

This portable Media player allows DivX, MPEG4, DAT, Xvid, MP3, OGG, WMA and JPEG play back. It sounds great with it's Dolby Digital capabilities and it's easy to search through all your music, movies and pics with the user friendly remote control. Using a 3.5" hard disk (not included), the MediaGate MG35 can store hundreds of movies, music files or images ready for viewing via your TV. With networking capabilities, this handy unit allows direct retrieval of files from your PC. Home entertainment has never been easier.



**Our Price \$250** **Save \$49**  
WebCode: ALT2001



**Our Price \$52** **Save \$23**  
WebCode: ANY0181

### Maxtor SATA Hard Drives

- Designed for mainstream PC, consumer electronics and emerging markets
- 80, 120, 250 & 300GB capacities
- 7200 RPM
- SATA interfaces
- 2MB or 8MB cache buffer
- Fluid dynamic bearing motors for quiet operation
- 120GB (MAX0066) **\$154**
- 250GB (MAX0056) **\$319**
- 300GB (MAX0061) **\$374**



80GB  
Our Price **\$110** Save **\$19**  
WebCode MAX0054

### Maxtor Hard Drives ATA-133 7200RPM 8MB Cache

The solution for performance PCs with data intensive applications such as network attached storage, home networking devices, audio, video and other multimedia applications.

- 120GB (MAX0052) **\$125**
- 160GB (MAX0053) **\$140**



80GB  
Our Price **\$99** Save **\$10**  
WebCode MAX0051

### Maxtor 80GB USB Hard Drive

Easy add-on storage for home or office. Instantly expand your storage to hold digital photos, music, and data files. It's simple to install—just plug the external drive into an available USB port on your PC. Stores over 61,000 brilliant digital photos (JPEG normal) or 1,300 hours of digital music (MP3).



Our Price **\$145** Save **\$4**  
WebCode MAX0068

### Maxtor OneTouch II - Push button backup External HDD

We know it's not just data, it's your life. Save it. Store it. Back it up with a Maxtor drive. Choose a new Maxtor OneTouch II drive if you need easy backup and lots of space to hold your movies, photos and graphics. Just push the button and all your files are backed up in one simple step. Or select a Maxtor Personal Storage 3000 or 3100 drive if you need easy add-on capacity to hold your growing files.

The Maxtor OneTouch II — simple backup and storage with Maxtor DriveLock to protect the contents of your drive if lost or stolen.

Maxtor pioneered the revolutionary "pushbutton" approach to data backup, and stays in the forefront with the new Maxtor OneTouch II external hard drive. With 300GB, there's ample room to store your videos, photos, graphics, music, and more in one convenient location! The drive features a simple Maxtor user-interface for drive management, security, and backup, a whisper-quiet 7200 RPM hard drive with 16MB cache and is equipped with both FireWire and USB 2.0 interfaces for easy connection.

#### Includes:

- External hard drive
- USB cable
- 6 to 6 pin FireWire/1394/LINK cable
- External AC power adapter
- Vertical stand
- Installation software CD
- Dantz® Restrospect® Express HD
- Maxtor OneTouch drives
- Maxtor OneTouch utilities
- User's guide
- Maxtor limited warranty

### Ideal storage for photos, music, editing video and creating high-end graphics



100GB Our Price <b>\$220</b> Save <b>\$9</b> WebCode MAX0069	200GB Our Price <b>\$330</b> Save <b>\$19</b> WebCode MAX0067	250GB Our Price <b>\$385</b> Save <b>\$14</b> WebCode MAX0065	300GB Our Price <b>\$435</b> Save <b>\$14</b> WebCode MAX0062
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### Maxtor Shared Storage Drive

Simple shared storage for your small office or home network. Automatic network configuration makes installation a breeze. The Shared Storage Drive looks like a local drive on each configured PC on your network. Privacy is easy with a web browser interface for making shared folders either full or limited access.

Organization is made simple with an exclusive Drag and Sort feature for dragging files such as music, photos, video, and data from your configured PC to the Shared Storage Drive for automatic sorting into appropriate folders. Two USB ports are included for connecting and sharing printers and additional hard drives.

- Add storage and share files, photos, and music with PCs on your network
- 2 USB ports for connecting and sharing printers and additional hard drives
- Access files from any networked PC
- Looks like a local drive on each configured PC
- Shared folders can be either full access (public) or limited access (private)
- Easy to use web browser interface to create privacy levels for shared folders
- Exclusive Drag and Sort feature for easy organization
- 200GB and 300GB capacities
- Automatic network configuration
- 10/100 Ethernet RJ-45 port connection
- For Windows 98SE, Me, 2000, XP computers on your network

### Shared storage for small office and home network



200GB Our Price <b>\$445</b> Save <b>\$4</b> WebCode MAX0070	300GB Our Price <b>\$498</b> Save <b>\$31</b> WebCode MAX0071
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## Imation CD & DVD Media

Imation CD-R, CD-RW and DVD media have a high-quality dye layer that ensures lower failure rates. Each disc is tested to meet Imation's exacting standards to protect against the toughest environmental conditions.

WebCode	Product Description	Price	SAVE
IMA0024	Imation CD-R 52x 700MB/80Min 10 + 2 Bonus Disks	\$7.50	\$3
MMM00997	Imation CD-R 52x 700MB/80Min 25 Pack Spindle	\$14	\$5
MMM4628	Imation CD-R 52x 700MB/80Min 50 Pack Spindle	\$26	\$4
IMA0025	Imation CD-RW 4x 700MB/80Min 10 + 2 Bonus Disks	\$15	\$4
MMM0803	Imation CD-RW 10x 24x 700MB/80Min Ultra Speed 25 Pack Spindle	\$37	\$15
IMA0026	Imation DVD-R 8x 4.7GB 10 + 2 Bonus Disks	\$13	\$3
IMA0027	Imation DVD+R 8x 4.7GB 10 + 2 Bonus Disks	\$13	\$3
MMM0804	Imation DVD+R 4x 25 Pack Spindle	\$25	\$6
MMM5947	Imation DVD+R 4x 25GB Double Layer 1 Pack	\$9	\$2
IMA0014	Imation DVD / DVD Coloured Jewel Cases 50 Pack	\$15	\$2

## Pioneer 16x DVD+/- Dual Layer DVD Burner (Beige)

This model supports 16x write speeds on both DVD-R/RW along with the capability to write at 6x speed on DVD-R/RW Double/Dual Layer media.

**Includes Nero LE**



**Our Price \$115**

WebCode: P100042

## Iomega® Rev™ USB Drive

Read and write to the Iomega Rev™ 35GB/90GB disks, which are pocket-sized, cartridges that hold 35GB of data (or up to 90GB of backup data with the included software compression).

Atapi (IOM2963) \$515  
Firewire (IOM3063) \$547  
SCSI (IOM3078) \$683



**Our Price \$546** **Save \$153**

WebCode: IOM2955

## LaCie DVD+RW Internal Drive with LightScribe

Create interactive video DVDs, store files and digital photos on your computer.

New LightScribe™ technology burns silkscreen quality custom labels directly onto your disks with the very same laser that burns data.

External USB (LAC7830) \$239

External Firewire (LAC7840) \$258



**Our Price \$175** **Save \$20**

WebCode: LAC0945



## Imation CD-R 52x 700MB/80Min 10 Pack Slim Case White Inkjet Printable



## Imation Printable CD + DVD Media

Expand your labeling options by using a CD/DVD printer or duplication service to print directly onto Imation printable discs. The premium print quality of Imation printable media offers a professional, consistent look and feel to your CD creations.

WebCode	Product Description	Price	SAVE
IMA0022	Imation CD-R 52x 700MB/80Min 10x Slim Case White Inkjet Printable	\$9	\$2
MMM0413	Imation CD-R 52x 700MB/80Min 50x Spindle White Inkjet Printable	\$25	\$10
MMM2958	Imation CD-R 52x 700MB/80Min 50x Spindle Gold Thermal Printable	\$25	\$10
MMM5327	Imation CD-RW 4x 4.7GB 10x Slim Case White Inkjet Hub Printable	\$15	\$2
MMM4635	Imation DVD-R 8x 4.7GB 50x Spindle White Inkjet Hub Printable	\$45	\$13
MMM6353	Imation DVD+R 8x 4.7GB 50x Spindle White Inkjet Hub Printable	\$45	\$13

## Imation USB 2.0 Flash Drive Swivel & Flash Drive Mini



## Imation USB 2.0 Swivel Flash Drive & Flash Drive Mini

The Imation USB 2.0 Flash Drives are compact and powerful flash drives. Featuring a unique "never lose the cap" swivel design to give you the sophisticated, professional look you seek from your personal technology. Weighing only 30 grams, the drives fit easily around your neck, in your pocket or briefcase giving you convenient access to your drive, anytime, anywhere you are. The Swivel drive features lightning fast USB 2.0 drive speed, data can be read up to 8MB/second and written up to 7MB/second. The Mini Flash Drive can read data up to 6MB/second and write data up to 1MB/second - saving you valuable time when transferring, sharing or storing your critical data.

WebCode	Product Description	Price	SAVE
MMM5886	Imation 128MB USB 2.0 Flash Drive Swivel	\$42	\$11
MMM5887	Imation 256MB USB 2.0 Flash Drive Swivel	\$66	\$23
MMM5888	Imation 512MB USB 2.0 Flash Drive Swivel	\$103	\$36
MMM5559	Imation USB 2.0 Flash Drive Swivel	\$171	\$58
MMM3604	Imation 2GB USB 2.0 Flash Drive Swivel	\$332	\$117
MMM6978	Imation 128MB USB 2.0 Flash Drive Mini	\$34	\$9
MMM6986	Imation 256MB USB 2.0 Flash Drive Mini	\$55	\$14
MMM6994	Imation 512MB USB 2.0 Flash Drive Mini	\$91	\$24
MMM7063	Imation 1GB USB 2.0 Flash Drive Mini	\$157	\$52

## Imation DVD Dual Layer 16x16x8x64 Internal Drive



## Imation CD-RW and DVD Drives

Whether you choose CD or DVD to backup, Imation have the Optical Drive to suit your needs! Now you can create your own digital masterpieces and share them with ease. All drive kits come complete with everything you need to get started, including the latest software.

WebCode	Product Description	Price	SAVE
MMM0060	Imation CD-RW Drive Internal 52x32x52	\$55	\$14
MMM0030	Imation DVD Dual Layer 16x16x8x64 Internal Drive	\$125	\$24
MMM1869	Imation DVD Dual Layer 16x16x8x64 External Drive	\$175	\$54

## Imation Data Tape Super DLT 160/320GB



## Imation 4mm, DLT, LTO & SDLT Tape Cartridges

WebCode	Product Description	Price	SAVE
MMM3441	Imation Data Tape 4mm 125m DD5-3	\$11	\$2
MMM3804	Imation Data Tape 4mm 150m DD5-4	\$15	\$5
MMM3430	Imation Data Tape DLT IV 2080GB (drive dependent)	\$15	\$5
IMA0105	Imation Data Tape Super DLT 160/320GB (drive dependent)	\$37	\$31
MMM3438	Imation Data Tape LTO Ultrium 100/200GB (drive dependent)	\$60	\$46
IMA1240	Imation LTO Ultrium Gen 2 200/400GB Cartridge	\$43	\$31
MMM4585	Imation LTO Ultrium Gen 3 400/800GB Cartridge	\$62	\$46
		\$165	\$95



**XP Sound**

The "XP201" PhonoMic pre-amp provides a combination of hard and software to achieve high quality transfer of old records and cassettes to your home desktop PC or laptop in addition to offering a handy high quality microphone pre-amp and headphone amplifier. The included software (Win only) "Diamond Cut 32 V4.0" allows users to professionally edit their recorded audio.



**Our Price \$176** **Save \$23**  
WebCode: XP50001

**Hot Drive 5.25" External Case**

- Suitable for IDE CD-Rom, CDR/RW, DVDROM, DVDRW
- RW & 3.5" Hard Drives
- Cooling Fan For Excellent Heat Dissipation
- Easy to Install
- USB 2.0 up to 480Mbps Transfer Rate
- Firewire up to 400Mbps Transfer Rate
- Supports Win 98SE/ ME/2000XP & Mac OS 9.0 or later.



**Our Price \$90** **Save \$39**  
WebCode: HOT0005

**Sennheiser****HD212PRO Closed Stereo Monitoring Headphone**

The HD 212 Pro closed dynamic hi-fi stereo headphones have a balanced sound image with a slight emphasis on the bass response. Dis will like their excellent attenuation of ambient noise and the soft, comfortable ear pads.



**Our Price \$110** **Save \$20**  
WebCode: SHN0006

**HP DeskJet Cartridges**

WebCode	Product Description	Price	SAVE
HPD2061	HP Ink Cartridge N° 27/28 Combo	Twinn Pack \$45	\$5
HPD2017	HP Ink Cartridge N° 56/57 Combo	Twinn Pack \$61	\$15
HPD2025	HP Ink Cartridge N° 56 Black for DJ 5550 - C6565AA	\$45	\$5
HPD4844	HP Ink Cartridge N° 10 Black for DJ 2000C/2500C - C4844AA	\$44	\$17
HPG4836	HP Ink Cartridge N° 11 Cyan for DJ 500/800 - C4836AA	\$45	\$10
HPG4837	HP Ink Cartridge N° 11 Magenta for DJ 500/800 - C4837AA	\$45	\$10
HPG4838	HP Ink Cartridge N° 11 Yellow for DJ 500/800 - C4838AA	\$45	\$10
HPD5002	HP Ink Cartridge N° 14 Black - C5011DA	\$34	\$10
HPD5001	HP Ink Cartridge N° 14 Colour - C5010DA	\$45	\$12
HPD6645	HP Ink Cartridge N° 15 Black for DJ 8100/8120/8400/845C - C6615DA	\$39	\$11
HPD6652	HP Ink Cartridge N° 17 Colour for DJ 840/845 - C6652AA	\$42	\$14
HPD6654	HP Ink Cartridge N° 20 Black for DJ 610C/630C/640C - C6614DA	\$39	\$15
HP1826	HP Ink Cartridge N° 23 Colour for DJ 720C/880C/890C - C1823DA	\$45	\$13
HPD9030	HP Ink Cartridge N° 26 Black for DJ 400/420/500 - C51626AA	\$41	\$15
HPD8772	HP Ink Cartridge N° 27 Black for DJ 3420 - C8727AA	\$26	\$7
HPD8782	HP Ink Cartridge N° 28 Colour for DJ 3420 - C8728AA	\$30	\$8
HPD9050	HP Ink Cartridge N° 28 Colour for DJ 600/610/630C - C51629AA	\$41	\$3
HPD095	HP Ink Cartridge N° 45 Black for DJ 710C/720C/830C - C51645AA	\$41	\$3
HPD090	HP Ink Cartridge N° 49 Colour for DJ 600/610/630C - C51649AA	\$42	\$12
HPD6656	HP Ink Cartridge N° 56 Black for DJ 5550 - C6565AA	\$28	\$7
HPD6657	HP Ink Cartridge N° 57 Colour for DJ 5550C - C6567AA	\$45	\$13
HPD6658	HP Ink Cartridge N° 58 Photo Colour for DJ 5550 - C65858AA	\$34	\$10
HPD9359	HP Ink Cartridge N° 59 Grey Photo - C5359AA	\$35	\$15
HPD6578	HP Ink Cartridge N° 78 Colour for DJ 900/1220C - C6578DA	\$45	\$13
HP1038	HP Ink Cartridge N° 78 Large Colour for DJ 900/1220C - C6578AA	\$83	\$12

**HP Mono LaserJet Toner Cartridges**

WebCode	Product Description	Price	SAVE
HP12612	HP Toner Cartridge for LaserJet 1010/1015 - Q2612A	\$90	\$35
HP14092	HP Toner Cartridge for LaserJet 1100/3200 Series 2,500 Pages - C4092A	\$75	\$24
HP12624	HP Toner Cartridge for LaserJet 1150 Series - Q2624A	\$102	\$29
HP17117	HP Toner Cartridge for LaserJet 1200 Series 3,500 Pages - C7115X	\$99	\$35
HP12614	HP Toner Cartridge for LaserJet 1300 Series 4,000 Pages - Q2613X	\$115	\$39
HP14096	HP Toner Cartridge for LaserJet 2100/2200 Series 5,000 Page - C4096A	\$129	\$45
HP12610	HP Toner Cartridge for LaserJet 2300 Series - Q2610A	\$155	\$46
HP620	HP Toner Cartridge for LaserJet 4/5 Series 6,000 Pages - 92298A	\$124	\$21
HP14129	HP Toner Cartridge for LaserJet 4000 Series 10,000 Pages - C4127X	\$165	\$60
HP18063	HP Toner Cartridge for LaserJet 4100 Series 10,000 Pages - C8061X	\$165	\$60
HP11338	HP Toner Cartridge for LaserJet 4200 Series 12,000 Pages - Q1338A	\$159	\$59
HP11339	HP Toner Cartridge for LaserJet 4300 Series - Q1339A	\$262	\$79
HP14182	HP Toner Cartridge for LaserJet 8100 Series 20,000 Pages - C4182X	\$243	\$52
HP18543	HP Toner Cartridge for LaserJet 8100 Series 20,000 Pages - C8543X	\$355	\$108
HP175	HP Toner Cartridge for LaserJet 5P/5MP/6P/6MP Series - C3903A	\$106	\$13
HP1115	HP Toner Cartridge for LaserJet 1200 Series 2,500 Pages - C7115A	\$80	\$25
HP741	HP Toner Cartridge for LaserJet 5L/6L Series - C3906A	\$80	\$25
HP14131	HP Toner Cartridge for LaserJet 5000 - C4129X	\$211	\$74
HP15949	HP Toner Cartridge for LaserJet 1160/1320 - Q5949A	\$92	\$34

**HP Colour LaserJet Toner Cartridges**

WebCode	Product Description	Price	SAVE
HP19700	HP Toner Cartridge for Colour LaserJet 1500/2500 Black - C9700A	\$107	\$48
HP19701	HP Toner Cartridge for Colour LaserJet 1500/2500 Cyan - C9701A	\$129	\$46
HP19703	HP Toner Cartridge for Colour LaserJet 1500/2500 Magenta - C9703A	\$129	\$46
HP19702	HP Toner Cartridge for Colour LaserJet 1500/2500 Yellow - C9702A	\$129	\$46
HP13960	HP Toner Cartridge for Colour LaserJet 2550 Black - C9360A	\$108	\$20
HP13978	HP Toner Cartridge for Colour LaserJet 2550 Cyan - C9361A	\$129	\$38
HP13981	HP Toner Cartridge for Colour LaserJet 2550 Magenta - C9363A	\$129	\$38
HP13979	HP Toner Cartridge for Colour LaserJet 2550 Yellow - C9362A	\$129	\$38
HP12670	HP Toner Cartridge for Colour LaserJet 3500/3700 Black - Q2670A	\$170	\$52
HP12671	HP Toner Cartridge for Colour LaserJet 3500/3700 Cyan - Q2671A	\$170	\$52
HP12673	HP Toner Cartridge for Colour LaserJet 3500/3700 Magenta - Q2673A	\$170	\$52
HP12672	HP Toner Cartridge for Colour LaserJet 3500/3700 Yellow - Q2672A	\$170	\$52
HP19720	HP Toner Cartridge for Colour LaserJet 4600/4650 Black - C9720A	\$200	\$75
HP19721	HP Toner Cartridge for Colour LaserJet 4600/4650 Cyan - C9721A	\$270	\$89
HP19723	HP Toner Cartridge for Colour LaserJet 4600/4650 Magenta - C9723A	\$270	\$89
HP19722	HP Toner Cartridge for Colour LaserJet 4600/4650 Yellow - C9722A	\$270	\$89
HP19730	HP Toner Cartridge for Colour LaserJet 5500 Black - C9730A	\$405	\$123
HP19731	HP Toner Cartridge for Colour LaserJet 5500 Cyan - C9731A	\$405	\$123
HP19733	HP Toner Cartridge for Colour LaserJet 5500 Magenta - C9733A	\$405	\$123
HP19732	HP Toner Cartridge for Colour LaserJet 5500 Yellow - C9732A	\$405	\$123

Visit [www.csw.com.au](http://www.csw.com.au) for the full range of the above listed brands and other popular brands including Kyocera-Mita, Brother, Fuji Xerox and Samsung.





## Canon Ink Cartridges

WebCode	Product Description	Price	SAVE
BC13EBK	Canon Ink Cartridge Black - BC13EBK	\$19	\$3
BC13EC	Canon Ink Cartridge Cyan - BC13EC	\$16	\$3
BC13EM	Canon Ink Cartridge Magenta - BC13EM	\$16	\$3
BC13EY	Canon Ink Cartridge Yellow - BC13EY	\$16	\$3
CAN0010	Canon Ink Cartridge Black - BC12BK	\$13	\$1
CAN0011	Canon Ink Cartridge Colour - BC12C	\$29	\$6
CAN0066	Canon Ink Cartridge Black - BC12BK	\$13	\$3
CAN0155	Canon Ink Cartridge Black Twin - BC124	\$22	\$3
CAN0164	Canon Ink Cartridge Colour Twin - BC124	\$44	\$5
CAN0065	Canon Ink Cartridge Colour - BC12C	\$25	\$5
CAN0048	Canon Ink Cartridge Black - BC16BK	\$22	\$3
CAN0050	Canon Ink Cartridge Cyan - BC16C	\$22	\$3
CAN0051	Canon Ink Cartridge Magenta - BC16M	\$22	\$3
CAN0052	Canon Ink Cartridge Yellow - BC16Y	\$22	\$3
CAN0049	Canon Ink Cartridge Photo Cyan - BC16PC	\$22	\$3
CAN0052	Canon Ink Cartridge Photo Mag - BC16PM	\$22	\$3
CAN0210	Canon Ink Cartridge Colour - BC15C	\$40	\$5
CO058	Canon Ink Cartridge Black - BC20	\$53	\$5
CAN0011	Canon Ink Cartridge Colour - BC12C	\$29	\$6

## Epson Ink Cartridges

WebCode	Product Description	Price	SAVE
EPA1040	Epson Ink Cartridge for Stylus C41UX/SX/C43UX/SX Black - T038	\$15	\$2
EPA1041	Epson Ink Cartridge for Stylus C41UX/SX/C43UX/SX Colour - T039	\$23	\$4
EPA0060	Epson Ink Cartridge for Stylus C6061 Black - T028	\$36	\$9
EPA0061	Epson Ink Cartridge for Stylus C6061 Colour - T029	\$32	\$8
EPA6190	Epson Ink Cartridge for Stylus C63C83 Black - T0461	\$18	\$1
EPA7290	Epson Ink Cartridge for Stylus C63C83 Cyan - T042290	\$12	\$1
EPA7390	Epson Ink Cartridge for Stylus C63C83 Magenta - T047390	\$12	\$1
EPA7490	Epson Ink Cartridge for Stylus C63C83 Yellow - T047490	\$12	\$1
EPA7011	Epson Ink Cartridge for Stylus C70C80/C82 Black - T032190	\$38	\$10
EPA7022	Epson Ink Cartridge for Stylus C70C80 Cyan - T032290	\$18	\$2
EPA7033	Epson Ink Cartridge for Stylus C70C80 Magenta - T032390	\$18	\$2
EPA7044	Epson Ink Cartridge for Stylus C70C80 Yellow - T032490	\$18	\$2
EPA7012	Epson Ink Cartridge for Stylus C82 Cyan - T042290	\$18	\$2
EPA7013	Epson Ink Cartridge for Stylus C82 Magenta - T042390	\$19	\$1
EPA7014	Epson Ink Cartridge for Stylus C82 Yellow - T042490	\$18	\$2
EPA1305	Epson Ink Cartridge for Stylus 440/460/540 Black - T050190	\$23	\$2
EPA9212	Epson Ink Cartridge for Stylus 400/400/800 Colour - T052090	\$29	\$1
EPA0812	Epson Ink Cartridge for R210R310/RX510 Black - T04912	\$17	\$2
EPA0511	Epson Ink Cartridge for R210R310/RX510 Cyan - T0492	\$17	\$2
EPA0514	Epson Ink Cartridge for R210R310/RX510 Light Cyan - T0495	\$17	\$2
EPA0515	Epson Ink Cartridge for R210R310/RX510 Light Magenta - T0496	\$17	\$2
EPA0512	Epson Ink Cartridge for R210R310/RX510 Magenta - T0493	\$17	\$2
EPA0513	Epson Ink Cartridge for R210R310/RX510 Yellow - T0494	\$17	\$2
EPA0810	Epson Ink Cartridge for Stylus 810/830/925/935 Black - T026	\$31	\$7
EPA0811	Epson Ink Cartridge for Stylus 810/830/925/935 Colour - T027	\$25	\$6
EPA044	Epson Ink Cartridge for Stylus 870/890/895/1270/1290 Black - T007	\$25	\$6
EPA1270	Epson Ink Cartridge for Stylus 1270/1290 Colour - T009	\$32	\$8



## Lexmark Toner Cartridges

WebCode	Product Description	Price	SAVE
LEX9481	Lexmark Toner Cartridge for Optra T 25k - 12A5845	\$423	\$149
LEX5224	Lexmark Toner Cartridge for Optra T 52k - 12A6835	\$423	\$149
LEX6223	Lexmark Toner Cartridge for Optra T 62k - 12A6865	\$473	\$133
LEX9642	Lexmark Toner Cartridge for Optra T 632/634 - 12A7465	\$463	\$129
LEX9639	Lexmark Toner Cartridge for Optra T 630/632 - 12A7462	\$343	\$95

## Konica Minolta Toner Cartridges

WebCode	Product Description	Price	SAVE
QMS1302	Konica Minolta Drum Cartridge for 1300W6K	\$135	\$26
QMS1303	Konica Minolta Drum Cartridge for 1300W 20K	\$151	\$24
QMS2304	Konica Minolta High Capacity Toner Cartridge for 2300W - Black	\$124	\$20
QMS2305	Konica Minolta High Capacity Toner Cartridge for 2300W - Yellow	\$187	\$29
QMS2306	Konica Minolta High Capacity Toner Cartridge for 2300W - Magenta	\$187	\$29
QMS2307	Konica Minolta High Capacity Toner Cartridge for 2300W - Cyan	\$187	\$29
QMS2404	Konica Minolta High Capacity Toner Cartridge for 2400W - Black	\$130	\$14
QMS2407	Konica Minolta High Capacity Toner Cartridge for 2400W - Cyan	\$194	\$22
QMS2406	Konica Minolta High Capacity Toner Cartridge for 2400W - Magenta	\$194	\$22
QMS2405	Konica Minolta High Capacity Toner Cartridge for 2400W - Yellow	\$194	\$22
QMS5446	Konica Minolta Toner Cartridge for 5440 - Black	\$237	\$40
QMS5449	Konica Minolta Toner Cartridge for 5440 - Cyan	\$340	\$58
QMS5448	Konica Minolta Toner Cartridge for 5440 - Magenta	\$340	\$58
QMS5447	Konica Minolta Toner Cartridge for 5440 - Yellow	\$340	\$58



## Lexar 256MB MP3 Player

The Lexar Digital Music Player LDP-600 is a full-featured Digital Music player, which lets you listen and carry your favorite music wherever you go. It supports MP3 and WMA formats. It includes an FM Radio with FM recording and Voice Recorder. It also includes an integrated FM transmitter so you can listen to your music files on any radio.



Our Price **\$180** Save **\$40**  
WebCode LXA1020

## Logitech Z-5500 Digital THX Speakers

Immerse yourself in high-fidelity digital surround sound with Logitech's THX-certified, 500 watt Z-5500 Digital 5.1 speaker system. The SurroundTouch Digital Control Center supports Dolby Digital, DTS, and DTS 96/24 soundtracks and includes digital and analog inputs for connecting DVD players, PCs, video game consoles, CD players, and more.



Our Price **\$535** Save **\$165**  
WebCode LOG3666

## HitVideoLab Home Theatre Headset

Get the most out of your next DVD viewing experience! The HitVideoLab 6 channel home theatre headset is an innovative way for people to enjoy the awesome sound of Dolby Digital AC-3 or DTS Digital Surround.



Our Price **\$99** Save **\$140**  
WebCode HVL0001

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## Australian Guide to Online Genealogy

Written specifically for Australians, as a clear, easy-to-follow guide, The Australian Guide to Online Genealogy combines tips and techniques on how to use the Internet and how to begin tracing your ancestry.



Book-Paperback  
Our Price **\$23** Save **\$6**  
WebCode PGN0008

## Secrets of the iPod, SE

Thoroughly updated guide reveals the secrets to using the world's most popular digital music player.



Book-Paperback  
Our Price **\$23** Save **\$6**  
WebCode PGN0116

## The Concise Penguin Dictionary of Computing

This highly accessible dictionary is the ideal source of information on all aspects of the world and language of computers. Covering terms from A20 gate to Zip drive, via floppy disk, matrix and Word for Windows, The Concise Penguin Dictionary of Computing will be invaluable not only to experts, including programmers and engineers, but to anyone who owns or uses a computer and wishes to improve their skills.



Book-Paperback  
Our Price **\$19** Save **\$5**  
WebCode PGN0018

## Complete Wireless Home Networking

An all-in-one guide that covers every angle of home wireless networking - from product selection to implementation and maintenance.

- Targets home wireless networking, explaining how to add wireless devices of all types. It also has a section for the best free advice on the Web.



Book-Paperback  
Our Price **\$27** Save **\$7**  
WebCode PGN0014

## Home Networking: A Visual Do It Yourself Guide

Looking to network your entire home? This is one of the only networking books you'll ever need! Setting up a home network doesn't need to be difficult. You can use this easy-to-understand reference to set up your computer, secure it, and turn it into an entertainment network. Don't be fooled by other guides - It can be that simple!



Book-Paperback  
Our Price **\$31** Save **\$8**  
WebCode PGN0017

## Absolute Beginner's Guide to Home Networking

You want to network your home but where do you start? Network your life, not just your computer! The perfect read for those starting out.



Book-Paperback  
Our Price **\$23** Save **\$6**  
WebCode PGN0015

## Defend I.T.: Security By Example

Reports of computer crime and incidents from the CERT Coordination Center at Carnegie Mellon University more than double each year and are expected to rise. Meanwhile, viruses and worms continue to take down organizations for days. Defend I.T.: Security By Example contains a plethora of real life case studies illustrating how to secure your computer network once and for all.



Book-Paperback  
Our Price **\$42** Save **\$12**  
WebCode PGN0001

## The Photoshop Elements 3 Book for Digital Photographers

The software is one of the most sought after photo editing packages around - now get the book on how to take advantage of the features! Edit images like a pro in this Photoshop Elements 3 handbook for digital photographers from best-selling author Scott Kelby.



Book-Paperback  
Our Price **\$42** Save **\$12**  
WebCode PGN0045

## Absolute Beginner's Guide to Digital Photography

You have a digital camera, now what? Thanks to memory sticks, docking stations, computers, image editing software, and printers, using your new digital camera can be frustrating and intimidating. With Absolute Beginner's Guide to Digital Photography, you'll learn everything you need to know to take great digital pictures and share them with friends or family.



Book-Paperback  
Our Price **\$19** Save **\$5**  
WebCode PGN0042

## Digital Scrapbooking

Are you a traditional scrapbook enthusiast looking for a way to organize your memories electronically? Have you never tried scrapbooking because you're not sure where to start? "Digital Scrapbooking" is here to start you on your journey! Cover the fundamentals of digital photography and digital scrapbook elements incorporating existing elements or even creating your own.



Book-Paperback  
Our Price **\$23** Save **\$6**  
WebCode PGN0080

## How Secure Is Your Wireless Network?

### Safeguarding Your Wi-Fi LAN

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Upgrade  
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WebCode: IAS0025

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WebCode: IAS0019



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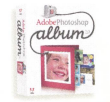
The perfect combination of control and reliability for home video editing. Experiment with effects, transitions, text, and audio. Transfer footage from your DV camcorder. Quickly edit your footage, add fun effects, and create custom DVDs complete with menus and scene indexes.

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Now you can see all of your pictures in one convenient place. Instantly sort them by date or use keywords to organize photos by people, places, events or any other subject you choose.

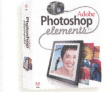


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Transform your digital photos like a pro. Use advanced editing options, instantly correct color and lighting, remove imperfections and transform your photos with fun effects.

Mac (ALD9512) \$139  
Academic \$95



Full Version  
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WebCode Win ALD9516

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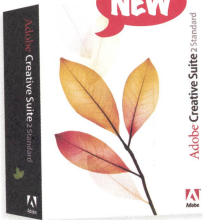
Adobe Creative Suite 2 Standard software, built for print workflows, combines full new versions of Adobe Photoshop® CS2, Illustrator®, InDesign®, and the enhanced Version Cue® file-version manager, the new Adobe Bridge file browser, new Adobe Stock Photos, and support for consistent color and Adobe PDF file creation, allowing you to realize your ideas more efficiently than ever as you publish to print, the Web, and mobile devices.

#### Includes:

- Adobe Photoshop**  
Adobe® Photoshop® CS2 software, the professional image-editing standard and leader of the Photoshop digital imaging line, delivers groundbreaking creative tools; unprecedented adaptability; and more efficient editing, processing, and file handling.
- Illustrator**  
Adobe® Illustrator® CS2 software gives you powerful new creative options, easier access to tools, and the versatility to quickly produce flexible graphics for print, video, the Web, and mobile devices.
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With its sophisticated design and production controls and unmatched integration with other Adobe applications, Adobe® InDesign® CS2 software is not only a better choice for page layout—it's a superior way to work.
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#### Includes:

- Adobe Photoshop**  
Adobe® Photoshop® CS2 software, the professional image-editing standard and leader of the Photoshop digital imaging line, delivers groundbreaking creative tools; unprecedented adaptability; and more efficient editing, processing, and file handling.
- Illustrator**  
Adobe® Illustrator® CS2 software gives you powerful new creative options, easier access to tools, and the versatility to quickly produce flexible graphics for print, video, the Web, and mobile devices.
- InDesign**  
With its sophisticated design and production controls and unmatched integration with other Adobe applications, Adobe® InDesign® CS2 software is not only a better choice for page layout—it's a superior way to work.
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- Acrobat 7.0 Professional**  
Adobe® Acrobat® 7.0 Professional software is the advanced way to create, control, and deliver more secure, high-quality Adobe PDF documents.
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Access both historical versions and parallel "alternates" of project files, including both Adobe and common non-Adobe file formats, in Version Cue® CS2.
- Adobe Bridge file browser**  
Efficiently organize, browse, locate, and preview the assets you need every day from within the new Adobe Bridge visual file browser.
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Upgrade		Full		
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WebCode Mac	ALG0049	WebCode Mac	ALD9552	
WebCode Win	ALG0050	WebCode Win	ALD9553	



## Adobe Photoshop Elements 3

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Book-Paperback	
Our Price	\$39
WebCode	PGN0038

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WebCode Mac	ADU0074	WebCode Mac	ADU0072	WebCode Mac	ALD9526	
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Upgrade		Full		
Our Price	\$295	Save \$85	Our Price \$891	Save \$202
WebCode Mac	ALG0041	WebCode Mac	ALD9550	
WebCode Win	ALG0042	WebCode Win	ALD9551	



## Adobe® InDesign® CS2

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- Design professional page layouts using unparalleled support for native Adobe file formats, sophisticated typographical controls, and rich creative options, including transparency effects, flexible table creation, object and text styles, and more.

PageMaker to InDesign		Upgrade		Full		
Our Price	\$595	Save \$171	Our Price \$295	Save \$85	Our Price \$1242	Save \$281
WebCode Mac	ALG0044	WebCode Mac	ALG0043	WebCode Mac	ALD0476	
WebCode Win	ALG0046	WebCode Win	ALG0045	WebCode Win	ALD0477	



## Adobe® GoLive® CS2

Adobe® GoLive® CS2 software lets you unlock the power of CSS with intuitive visual tools such as prebuilt CSS objects that you can drag and drop to build sophisticated sites. Jump-start your designs by automatically converting Adobe InDesign® layouts into XHTML or CSS Web pages. Or, design leading-edge Web and mobile content and other open global standards. Maintain your sites with comprehensive site management tools.

- Build sophisticated CSS-based Web content in an intuitive visual environment and enjoy comprehensive site maintenance.
- Efficiently create or leverage assets for your Web and mobile sites through tight integration with Adobe® Creative Suite 2.
- Design mobile sites and applications based on open standards, using visual authoring tools and native device emulation.

Upgrade		Full		
Our Price	\$295	Save \$85	Our Price \$715	Save \$162
WebCode Mac	ALG0039	WebCode Mac	ALD9548	
WebCode Win	ALG0040	WebCode Win	ALD9549	



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Training DVD	
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WebCode	TOT0004

## QuarkXPress 6.5

Much more than a page layout tool, QuarkXPress 6.5 provides proven performance with graphics and colour management, text processing, Web-page design, XML, output and more!

QuarkXPress is powerful layout software with an intuitive, versatile interface that lets you combine writing, editing, and typography with color and pictures to produce dynamic final output.

- Supports Mac OS X v10.3, Windows XP, and Windows XP.
- Perform advanced image manipulation functions within QuarkXPress to match it with the surrounding page layout.
- Import native Adobe QuarkXPress layouts while keeping the layers, channels, and paths intact.

Upgrade from 4 **\$595**

Academic **\$1199**



Our Price **\$2332** ~~\$378~~  
WebCode Win. QUA0093  
WebCode Mac. QUA0092

## Centennial Media Dreamweaver MX Training

Dreamweaver MX 2004 package includes 3 CDs of training for Dreamweaver MX and 1 CD of training for Dreamweaver MX 2004 new features. Your trainer is Macromedia Specialist Trainer Paul Le Fevre. Comprehensive training for designers and developers alike.



Our Price **\$329** ~~\$34~~  
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The most significant release of ColdFusion since its inception ten years ago. Still the fastest, easiest way to build and deploy powerful Internet applications, ColdFusion MX 7 introduces powerful, new services for rich Flash and XForms generation, integrated business process, dynamic generation of printable documents, and application access through Instant Messaging and SMS text messaging on mobile devices. Used alone or in conjunction with J2EE or .NET solutions, ColdFusion MX 7 solves new classes of problems while reducing development time and costs.

Standard Academic (MME2006) **\$974**

Standard Upgrade (MMC2005) **\$752**

Enterprise Upgrade (MMC2001) **\$3498**

Enterprise (MMC2000) **\$6942**



Standard  
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WebCode MMC2004

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Create professional-quality, interactive Flash simulations and software demonstrations. Without programming or multimedia skills, automatically record all on-screen actions to instantly create demonstrations complete with mouse movements and text captions, or simulations with scored interactions and instructional feedback. Point and click to edit, customize, or add eLearning interactions. Captivate files are small in size, high resolution, and are SCORM/AICC compliant for easy LMS deployment. Seamless integration with Macromedia Breeze and Flash MX 2004 provides design, development, and delivery capabilities.

Academic (MME0236) **\$286**

Upgrade (MMC1093) **\$418**



Full  
Our Price **\$689** ~~Save \$129~~  
WebCode MMC1092

## Macromedia Contribute 3

Macromedia Contribute 3 redefines web publishing, making it an activity open to everybody, everyday, requiring no technical expertise. Contribute 3 lets everyone in an organization publish to websites, bringing them all into the web with up-to-date content and effective communication.

Academic (MME0235) **\$132**

Upgrade (MMC0229) **\$117**

6 Pack (MMC0228) **\$1025**



Full  
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WebCode MMC0227

## Macromedia Dreamweaver MX 2004

A powerful combination of visual layout tools, application development features, and code editing support, enabling developers and designers of every skill level to create visually appealing, standards-based sites and applications quickly. Dreamweaver provides the tools professionals need in an integrated, streamlined environment.

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Upgrade (MAC0204) **\$302**



Full  
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WebCode MAC0203

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Improved rich media support, streamlined publishing and robust features to jumpstart development of interactive experiences plus advanced functions for creating interactive content, professional quality video experiences, and mobile phones and devices.

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Upgrade (MAC0212) **\$465**

Standard (MAC0209) **\$790**

Standard Upg (MAC0210) **\$390**

Standard Aca (MAC0223) **\$145**



Full  
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WebCode MAC0211

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Create, optimise and integrate great-looking web graphics. Fireworks MX 2004 provides professional control that enables easy creation of sophisticated rollover effects, multi-state buttons and pop-up menus. Fireworks MX 2004 streamlines productivity with enhanced performance and third-party web development tools.

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Upgrade (MAC0208) **\$230**



Full  
Our Price **\$468** ~~Save \$25~~  
WebCode MAC0207

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Academic (MAC0300) **\$284**

Upgrade from MX (MAC0216) **\$607**

Upgrade from any Macromedia product (MAC0215) **\$759**

Full with Flash Pro (MAC0217) **\$1475**

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The Macromedia Web Publishing System is a scalable, complete solution for businesses to affordably build, manage, and publish to websites.

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- 1 Studio MX 2004 with Flash Professional and 1 Contribute 3 license for a web developer
- 1 Contribute Publishing Services user access licenses
- 1 Contribute and Contribute Publishing Services maintenance for 1 year

The system meets the full spectrum of needs for web developers, IT managers, and business professionals—empowering users to easily publish to the web within a centrally controlled, standards-based environment.



10 User  
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Upgrade (MMC0185) **\$612**



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Upgrade from 10 **\$175**

Upgrade from 9 **\$249**



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WebCode Mac. MAC0138  
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**NEW**

Full Version	Upgrade
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WebCode.....AUT0082	WebCode.....AUT0083

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AutoCAD® 2006, the 20th release of AutoCAD software, builds upon a tradition of innovation, resulting in true out-of-the-box productivity. Migration is easy, deployment is simple, and intuitive new features make learning a snap. New drafting and annotation tools such as Dynamic Blocks and enhanced hatching eliminate the need for time-consuming workarounds. These new features in conjunction with powerful existing tools like the Sheet Set Manager and tool palettes offer a complete set of tools to manage everything from simple to complex projects.

Upgrade from 2004 (AUT0086) **\$1828**  
Upgrade from 2002 (AUT0087) **\$2739**

**AutoCAD®  
2006**

Autodesk

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Our Price <b>\$5979</b> <del>\$621</del>	Our Price <b>\$915</b> <del>\$53</del>
WebCode.....AUT0084	WebCode.....AUT0085

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Award-winning Autodesk VIZ provides a fluid 3D environment for modelling, rendering and animation. Whether you're an architect, land planner or mechanical designer, you can use Autodesk VIZ throughout the design process to develop and explore concepts and alternatives, communicate design intent to clients and validate your design to ensure they are error free. Autodesk VIZ, a multimedia software tool that brings your designs alive.

Upgrade from 2005 (AUT0093) **\$770**

**AUTODESK  
VIZ  
2006**

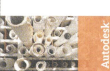
Autodesk

**NEW**

Our Price <b>\$3345</b> <del>\$175</del>	
WebCode.....AUT0092	

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Now you can easily use and reuse existing design data in scanned maps, drawings, aerial photographs, and satellite imagery. Autodesk Raster Design, the editing and image-processing tool that works inside your AutoCAD software-based application, can save hours of drawing time by converting raster to vector and combining drawings with real-world imagery.

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Our Price <b>\$2822</b> <del>\$170</del>	
WebCode.....AUT0091	

**Autodesk DWF Composer 2**

Accelerate design reviews with Autodesk® DWF® Composer, the all-digital way to review, mark up, and revise 2D and 3D designs. View and print DWF and DWFx files with accuracy and fidelity, then measure and annotate the DWF file before round-tripping the markups for revisions. Cycle times, errors, and costs will shrink. Efficiency, however, will soar.

Upgrade (AUT0094) **\$160**

**AUTODESK®  
DWF COMPOSER**

Autodesk

**NEW**

Our Price <b>\$329</b> <del>\$23</del>	
WebCode.....AUT0090	

**AutoSketch 9**

AutoSketch 9 software provides a comprehensive set of CAD tools for creating precision drawings—from electrical details to floor plans, from conceptual sketches to product specifications, and much more. Offers straightforward drafting in a Windows XP-like environment plus tutorials and wizards for a fast start.

**AutoSketch 9**

Autodesk

Our Price <b>\$192</b> <del>\$28</del>	
WebCode.....AUT0077	

**Autodesk Symbols 2000**

Autodesk Symbols 2000 simplifies routine drawing tasks and boosts productivity through a toolbar-style graphical interface, which guides you rapidly through a wide selection of technically correct symbols. With a click of the mouse symbols are placed easily and exactly where they are needed.

Architectural Series contains over 5,600 symbols for building design and documentation. Engineering Series contains over 10,800 symbols covering all aspects of Engineering.



Autodesk

Architectural	Engineering
Our Price <b>\$189</b> <del>\$31</del>	Our Price <b>\$189</b> <del>\$31</del>
WebCode.....AC00098	WebCode.....AC00099

**Autodesk Volo View 3**

Using Volo View 3, team members can view, mark up, measure, print, and plot AutoCAD 2004, Autodesk Inventor 7, and raster formats as well as DWF (Design Web Format) files without the original design creation software. The files display and print exactly as the document creator intended—with rich design information, such as layers, views, and measurements.

Upgrade (AUT0043) **\$165**



Autodesk

Our Price <b>\$319</b> <del>\$33</del>	
WebCode.....AUT0042	

**Inventor Series**

- Autodesk Inventor
- Autodesk Mechanical Desktop
- AutoCAD Mechanical
- AutoCAD (included as part of AutoCAD Mechanical)

**NEW****AUTODESK  
INVENTOR  
PROFESSIONAL  
10**

Autodesk

Our Price <b>\$249</b> <del>\$26</del>	
WebCode.....AUT0078	

**Revit Series**

- Autodesk Revit
- AutoCAD

**NEW****AUTODESK® AutoCAD  
REVIT SERIES  
8**

Autodesk

Our Price <b>\$249</b> <del>\$26</del>	
WebCode.....AUT0074	

**Building Series**

- Autodesk Architectural Desktop
- AutoCAD (included as part of Autodesk Architectural Desktop)

**NEW****AUTODESK®  
ARCHITECTURAL  
DESKTOP  
2006**

Autodesk

Our Price <b>\$249</b> <del>\$26</del>	
WebCode.....AUT0072	

AutoCAD, Autodesk Civil 3D and Autodesk VIZ student versions also available separately.



### Microsoft Works 8

Works 8 is the latest version of the popular essential home productivity software. It includes a word processor, spreadsheet, database and calendar. Plus, Works 8 has new, professionally designed templates and a new tool to help organise common projects. Buy Works 8 for less and upgrade to Office for less!



**Our Price \$82** **Save \$17**  
WebCode MSC2920

### Microsoft Digital Image Suite 10

Packed with all of the tools you need to organise your photos, edit them using hundreds of tools, print and share your work and archive photos for safekeeping. Licensing price available.

Picture It! Photo Premium 10 (MSC2921) \$63



**Our Price \$97** **Save \$22**  
WebCode MSC2921

### Microsoft Encarta Premium Suite 2005

Encyclopedia with research and learning tools. Dictionary & Thesaurus, Literature Guides and Chart Maker. Licensing price available.

Standard 2005 (MSC2470) \$22  
Premium CD (MSC2471) \$69



**Our Price \$69** **Save \$10**  
WebCode MSC2472

### Microsoft Works Suite 2005

Works Suite includes five popular Microsoft home products in one, easy-to-use package. Works Suite includes Microsoft Works, Microsoft Word and the latest versions of Microsoft Money Standard, Microsoft Encarta standard, and Microsoft Picture It! Photo Premium.

Buy Works Suite and upgrade to Office for less!



**Our Price \$139** **Save \$30**  
WebCode MSC2924

### Microsoft MSDN Universal 7

Provides priority access to essential resources for developers, including timely delivery of everything you need to build XML Web services and applications. Get uninterrupted access to the latest Microsoft technologies 24 hours a day, 7 days a week online and through regular CD or DVD updates.

Upgrade/Renewal (MSA0778) \$2975



**Our Price \$3629** **Save \$264**  
WebCode MSA0777

### Microsoft Exchange Server 2003 Standard

Designed to meet the messaging and collaboration needs of small and medium-size corporations. With Exchange 2003 Standard Edition, you get:

- Exchange 2003
- The flexibility to be configured as a Microsoft Office Outlook Web Access front-end server
- 16-gigabyte data storage maximum

Full (MSS2081) \$1979

\*for non-commercial use only Academic\*

**Our Price \$1078** **Save \$98**  
WebCode MSS2080



### Microsoft Visual Studio .Net Professional

Visual Studio .Net Professional will enable developers to build next generation Internet applications that target any Internet device and integrate with any platform.

Upgrade (MSA9837) \$832  
Full (MSA9836) \$1299



**Our Price \$140** **Save \$18**  
WebCode MSA9819

### Microsoft Publisher 2003

Publisher 2003 is a comprehensive solution for creating and publishing a wide variety of publications for desktop printing, commercial printing, e-mail distribution, or viewing on the Web. Publisher 2003 looks and works more like other programs in the Microsoft Office System, making it easier to use the right Office tool for the task.

Upgrade (MSA4235) \$159  
Full (MSA4234) \$269



**Our Price \$142** **Save \$17**  
WebCode MSA4233

### Microsoft Visio 2003 Std

Microsoft Office Visio 2003 gives business and technical users the power to visualise and communicate ideas, information, and systems. Use the simple, flexible tools in Visio 2003 to easily create business and technical charts and diagrams that capture your inspiration and communicate it with impact.

Standard Upgrade (MSA4245) \$150  
Full (MSA4244) \$297



**Our Price \$97** **Save \$11**  
WebCode MSA4243

### Microsoft Small Business Server 2003

Access your desktop remotely from any browser - anywhere in the world - 24x7. Collaborate on projects via an auto deployed Windows Sharepoint Services site. Best-of-breed email and calendaring solution with Exchange 2003 and Outlook 2003.

SBS 2003 Premium (MSS9705) \$2295



**Our Price \$985** **Save \$114**  
WebCode MSS9700

### Microsoft Visual Basic .net Standard

Reengineered to be a first-class language on the Microsoft .NET Framework, it provides the easiest and most productive route for new developers and existing Visual Basic programmers to quickly build Windows-based applications.

Full (MSA9812) \$165



**Our Price \$87** **Save \$12**  
WebCode MSA9811

### Microsoft FrontPage 2003

Use enhanced design tools to produce better looking Web sites. Generate better code, or expand your code skills. Use built-in scripting tools for interactive results. And with professional coding tools, you can write code faster, more efficiently, and with greater accuracy. Connect with people and information in new ways by building Extensible Markup Language (XML) data-driven Web sites.

Upgrade (MSA4217) \$170  
Full (MSA4216) \$319



**Our Price \$148** **Save \$11**  
WebCode MSA4215

### Microsoft Visio 2003 Pro

Microsoft Office Visio Professional 2003 includes a full range of diagrams for business and technical professionals to create network and directory service diagrams, software, database, website diagrams, engineering drawings and building space and floor plans.

Pro Upgrade (MSA4242) \$374  
Full (MSA4241) \$737



**Our Price \$209** **Save \$36**  
WebCode MSA4240

### Microsoft SQL Server 2000 Standard

Relational Database Management and Analysis System. Great support for Web standards, powerful tools for system management and tuning, and exceptional scalability and reliability for your money make SQL Server 2000 the best choice for the next generation of enterprise-class database solutions.

Full 5 Client (MSS8209) \$2276

\*for non-commercial use only Academic 10 Client\*

**Our Price \$1478** **Save \$119**  
WebCode MSS8206



### Microsoft Visual C++ .net Standard

Visual C++ .NET is the most powerful C++ tool for creating the highest-performance software for Windows and the Web. Including features like IntelliSense Technology, Edit and Continue which speeds the development process.

Full (MSA9816) \$165



**Our Price \$87** **Save \$12**  
WebCode MSA9815



## Price drop on assorted Microsoft Office Suites!

### Office Student & Teacher

### Office Pro Edition full

### Office Pro Academic

### Office Small Business full

### Office Standard full

### Office Standard Upgrade

### Office Pro Upgrade

### Office Small Business Upgrade

## Why get MS Office 2003?

Microsoft Office 2003 Editions deliver significant improvements over previous versions of Office, including:

- Advanced e-mail management tools to help you fight back against spam and viruses better than ever before.
- Improved automatic document recovery and compatibility with older files, which mean fewer worries about lost data.
- Brand-new collaboration features to allow you to share work easily and stay connected anytime, anywhere.

Microsoft Office	Student & Teacher Edition*	Standard Edition	Small Business Edition	Professional Edition
Word	•	•	•	•
Excel	•	•	•	•
PowerPoint	•	•	•	•
Outlook	•	•	•	•
Outlook with Contact Manager			•	•
Publisher			•	•
Access				•
Enhanced XML Technology				•
Enhanced IRM Technology				•

\* For non-commercial use only. Must be a "Qualified Educational User." See Student and Teacher Edition 2003 package for details.

### MS Office 2003 Editions work best with Windows XP

- If you use Windows XP or Windows 2000, then Office 2003 is the right choice for you.
- If you use Windows 98 or Windows Me, you should consider upgrading to Windows XP.
- If upgrading to Windows XP is not an option for you, then Office XP is the best way to go.

Standard Edition Upgrade	Standard Edition Full	Small Business Upgrade	Small Business Full
Our Price <b>\$359</b> Save <b>\$65</b>	Our Price <b>\$608</b> Save <b>\$66</b>	Our Price <b>\$335</b> Save <b>\$64</b>	Our Price <b>\$679</b> Save <b>\$70</b>
WebCode: MSA4221	WebCode: MSA4220	WebCode: MSA4226	WebCode: MSA4225

Student & Teacher Edition*	Pro Edition Academic	Pro Edition Upgrade	Pro Edition Full
Our Price <b>\$165</b> Save <b>\$34</b>	Our Price <b>\$495</b> Save <b>\$54</b>	Our Price <b>\$488</b> Save <b>\$86</b>	Our Price <b>\$729</b> Save <b>\$120</b>
WebCode: MSA4237	WebCode: MSA4222	WebCode: MSA4224	WebCode: MSA4223

\*For non-commercial use only

## Microsoft Windows XP Home with SP2

Designed exclusively for home computing. Whether you're working with digital photos, music, or video, or building a home network, Windows XP innovations bring you into the digital age with ease.

Full (MSA5010) **\$285**



Upgrade	
Our Price <b>\$149</b>	Save <b>\$20</b>
WebCode.....	MSA5011

## Microsoft Windows XP Professional with SP2

Delivers everything you demand from your computing experience. Whether you're on your own or running a business of any size, optimize your productivity with the digital world's latest innovations.

Full (MS59500) **\$418**

Academic\* (MS59501) **\$118**



Upgrade	
Our Price <b>\$297</b>	Save <b>\$48</b>
WebCode	MS59502

## Microsoft Plus! SuperPack for Windows XP

Microsoft Plus! SuperPack for Windows XP is loaded with stunning screensavers and themes, exciting games, and great new ideas for customizing photos, music, and home movies. It's a wonderful way to take your Windows experience to the next level.



Our Price <b>\$49</b> Save <b>\$6</b>
WebCode: MSA5012

## Microsoft Project Standard 2003

Microsoft Office Project Standard 2003 is used by project managers who need a desktop tool to manage their projects independently but who do not require strong coordination with other project managers or the ability to manage resources from a central repository.

Upgrade (MSA2054) **\$525**

Full (MSA2053) **\$919**



Academic*	
Our Price <b>\$104</b>	Save <b>\$9</b>
WebCode .....	MSA2052

## Microsoft Project Professional 2003

The desktop enterprise project management program that is used with MS Office Project Web Access and MS Office Project Server 2003. All the core scheduling tools in Project Standard 2003, plus powerful portfolio and resource management capabilities when connected to Project Server 2003.

Upgrade (MSA2057) **\$925**

Full (MSA2056) **\$1535**



Academic*	
Our Price <b>\$287</b>	Save <b>\$22</b>
WebCode	MSA2055

## Windows Server 2003

Windows Server 2003 Standard Edition is the network operating system for small organisations and departmental use. It delivers intelligent file and printer sharing, secure Internet connectivity, centralised desktop application deployment, and Web solutions that connect employees, partners, and customers.

Std 5 Client (MS59867) **\$1540**

Std 10 Client (MS59866) **\$1815**

Enterprise Available. \*For non-commercial use only



Std 5 Client Academic*	Our Price <b>\$685</b> Save <b>\$85</b>	Std 10 Client Academic*	Our Price <b>\$835</b> Save <b>\$64</b>
WebCode: MS59865	WebCode: MS59864		

## Flight Simulator 2004

A Century of Flight lets you soar through aviation history at the controls of Lindbergh's Spirit of St. Louis, the Douglas DC-3, the Wright Flyer (the world's first successful powered aircraft), and other legendary aircraft.



PC	Our Price <b>\$77</b>	Save <b>\$22</b>
WebCode	MSC3011	

## Combat Flight Simulator 2

- Veteran World War II pilots from both sides of the Pacific conflict help make every detail - from the roar of engines to radio chatter - MS graphics technology brilliantly captures classic World War II naval fighters
- From mission briefings to award ceremonies



PC	Our Price <b>\$23</b>	Save <b>\$7</b>
WebCode.....	MSC3004	

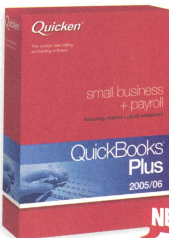
## Train Simulator 1

Microsoft Train Simulator brings the power and excitement of some of the world's most famous trains to your PC, placing you in the role of engineer or passenger with unprecedented realism, exciting real-world rail challenges, and the tools to recreate almost any railroad experience in the world.



PC	Our Price <b>\$32</b>	Save <b>\$8</b>
WebCode	MSC3006	





**NEW**

### QuickBooks Plus 2005/06

Give us easy-to-use tools and the latest tax tables you need to help manage and maintain control of your payroll. The integrated payroll feature saves you time and money by avoiding duplicate data entry and helps to avoid hassles associated with incorrect payroll withholding.

#### New Features

- Import bank statements into QuickBooks and match transactions easily\*
- Process credit card transactions directly through QuickBooks\*\*
- Lodge your BAS online
- Pay all BAS-related liabilities with a single cheque
- Pay employees into multiple bank accounts
- Half-monthly pay periods
- Easier to use Help functionality
- Email Payslips, Payment Summaries and Employee Super Notifications.
- Tech Support, Product Updates & Upgrades for 12 months on Full and Upgrade versions of QuickBooks Plus 2005/06\*.

\*Check with your financial institution to see if they support this feature

\*\*Extra charges & terms and conditions may apply

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\*\*Terms & Conditions at [www.quicken.com.au/promotions/](http://www.quicken.com.au/promotions/)

Subscription	Upgrade Version	Full Version
Our Price <b>\$179</b> Save <b>\$20</b>	Our Price <b>\$305</b> Save <b>\$44</b>	Our Price <b>\$429</b> Save <b>\$70</b>
WebCode: QUI0082	WebCode: QUI0079	WebCode: QUI0076



### QuickBooks Customer Manager

Customer Manager is a new information and task management tool that will help you better serve your customers. It takes the pain out of tracking customer information in multiple systems because it consolidates all your client's critical information in one place and displays it on one, simple screen.

- Centralise all your customer data into one system
- Enhances customer service
- Simple to get started
- Manage projects efficiently
- Multi user synchronisation



Full Version
Our Price <b>\$220</b> Save <b>\$29</b>
WebCode: QUI0068

### Payroll Premier 2005/06

Payroll Premier makes payroll "Quicken.easy" giving you more time to manage your business. The best selling stand alone payroll software in Australia is designed to keep you up to date, compliant with the latest legislation, and grows as your business needs to grow.

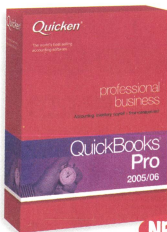
- New single page summary form
- Enhanced search functionality
- Automated check of Tax File Numbers

**NEW**



Full Version
Our Price <b>\$529</b> Save <b>\$70</b>
WebCode: QUI0087

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**NEW**

### QuickBooks Pro 2005/06

Save your business undue costs by utilising QuickBooks email functionality. Invoices, statements, estimates, purchase orders, sales orders, sales receipts, adjustment notes, and reports can all arrive on your suppliers or customers desktop within minutes.

#### New Features

- Import bank statements into QuickBooks and match transactions easily\*
- Run a report to display a list of all transactions without tax codes
- Process credit card transactions directly through QuickBooks\*\*
- Lodge your BAS online
- Pay all BAS-related liabilities with a single cheque
- Pay employees into multiple bank accounts
- Half-monthly pay periods
- Email Payslips, Payment Summaries & Employee Super Notifications
- Tech Support, Product Updates & Upgrades for 12 months on Full and Upgrade versions of QuickBooks Pro 2005/06\*.

\*Check with your financial institution to see if they support this feature

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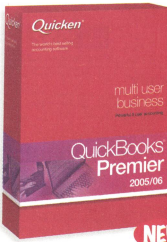
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Subscription	Upgrade Version	Full Version
Our Price <b>\$224</b> Save <b>\$25</b>	Our Price <b>\$395</b> Save <b>\$64</b>	Our Price <b>\$589</b> Save <b>\$110</b>
WebCode: QUI0083	WebCode: QUI0080	WebCode: QUI0077



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**NEW**

### QuickBooks Premier 2005/06 - 5 User Licence

QuickBooks is available in industry-specific editions that offer specialised tools and features unique to your industry. Whether you're an Accountant, Contractor, Manufacturer, Not-for-Profit, Professional, Retailer, or Property Manager there is a specific QuickBooks version for you. QuickBooks Premier allows up to 5 users.

#### New Features

- Import bank statements into QuickBooks and match transactions easily\*
- Run a report to display a list of all transactions without tax codes
- Process credit card transactions directly through QuickBooks\*\*
- Pay all BAS-related liabilities with a single cheque
- Pay employees into multiple bank accounts
- Half-monthly pay periods
- Email Payslips, Payment Summaries & Employee Super Notifications
- Tech Support, Product Updates & Upgrades for 12 months on Full and Upgrade versions of QuickBooks Premier 2005/06\*.

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Subscription	Upgrade Version	Full Version
Our Price <b>\$449</b> Save <b>\$50</b>	Our Price <b>\$620</b> Save <b>\$120</b>	Our Price <b>\$1428</b> Save <b>\$271</b>
WebCode: QUI0084	WebCode: QUI0081	WebCode: QUI0078



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MYOB

MYOB  
JustInvoices

If you're looking for a better way to prepare your invoices, track your sales and calculate GST received, but you're not after a complete business management system, MYOB JustInvoices is just what you need.



Our Price **\$66** ~~\$13~~  
WebCode MYB0027

MYOB  
BusinessBasics

No need to jump between programs (such as spreadsheets and word processors) to get your business done. Now with MYOB BusinessBasics, you can run all your basic business tasks, create quotes, email invoices and enter transactions - from the one easy business program.



Our Price **\$88** ~~\$11~~  
WebCode MYB0004

MYOB Test  
Drive

MYOB Test Drive allows you to try Australia's leading business software. With up to 90 days use of MYOB's new leading products including the Macintosh range, trial Australia's number one range today.



Our Price **\$9** ~~\$1~~  
WebCode MYB0047

## MYOB Accounting Plus 15

MYOB Accounting Plus helps you manage both your business and payroll with ease.

It's packed with the same business management features that you'll find in MYOB Accounting, plus it automates your pay runs, calculates PAYG withholdings, works out the super and then updates all your accounts automatically. Easy! If you bill clients for your time, MYOB Accounting Plus can help you and your team to track every minute and every task performed for them. It's easy to see what needs to be billed and how your employees are spending their time - you won't miss a thing.

- Process pays weekly, fortnightly, twice a month or monthly - or in any combination of those.
- Pay employees based on the time recorded on their activity slips.
- Quickly report on all obligations - PAYG withholdings, superannuation, leave, union fees.
- Includes the PAYG withholding tax tables for 2004/2005. Includes automatic update to the 2005/2006 tax tables when available.

- \* Via redemption from MYOB. Offer applies to full version only. Bonus Phone ends 31/7/05.

Super Choice ready!

**NEW**

**BONUS\* Uniden Phone & Headset**  
RRP \$158

Full Version  
Our Price **\$459** ~~\$489~~  
WebCode MYB0043

Upgrade Version  
Our Price **\$249** ~~\$299~~  
WebCode MYB0045

## MYOB Accounting 15

MYOB Accounting is for businesses that need to streamline accounts procedures and would benefit from improved inventory management, better management of customer and supplier relationships and advanced business reporting.

- Manage your sales, receivables and GST obligations
- Track your purchases and payables
- Keep track of your inventory
- Access M-Powered Services

- \* Via redemption from MYOB. Offer applies to full version only. Bonus Phone ends 31/7/05.

Full Version  
Our Price **\$230** ~~\$269~~  
WebCode MYB0042

Upgrade Version  
Our Price **\$220** ~~\$19~~  
WebCode MYB0044



## MYOB FirstEdge - for Mac

MYOB FirstEdge is the easy business and accounting software for small or home-based business on the Mac. Run all your basic management tasks from the one easy business program. MYOB FirstEdge simplifies the way you quote, track and invoice your jobs, simultaneously tracking your transactions and GST, and providing you with over 70 reports to help you understand your business.

- Create quotes that convert to invoices
- Track job costs and profitability
- Email quotes, invoices and reports
- Automatically reconcile your accounts



Full Version  
Our Price **\$88** ~~\$11~~  
WebCode MYB0005

## MYOB RetailManager 8

Replace your cash register with MYOB RetailManager, a complete point-of-sale system that streamlines store operations and helps you better manage sales, stock, GST, staff and customers.

You can operate MYOB RetailManager on its own, add licences, and combine it with MYOB RetailManager Enterprise to provide centralised management of multiple point-of-sale or store locations.

**Includes 12 months of 7-days-a-week Enhancements & Support**



Full Version  
Our Price **\$1649** ~~\$341~~  
WebCode MYB0055

## MYOB Premier 9

MYOB Premier is a multi-user business management software with integrated payroll, inventory, time billing and multiple currency transaction capability.

- Multiple users can access information simultaneously over your network
- Integrated banking, sales, purchases, payroll and time billing

**BONUS\* Uniden Phones & M Desktop**  
RRP \$448

- \* Via redemption from MYOB. Offer applies to full version only. Bonus Phone ends 31/7/05.

**Includes 12 months of FREE Upgrades and Support.**  
Super Choice ready!

Full Version  
Our Price **\$1245** ~~\$250~~  
WebCode MYB0048



## MYOB AccountEdge 5 - for Mac

MYOB AccountEdge is issued with a single user licence and with unlimited additional licences available. MYOB AccountEdge gives you the power to manage even the most complex medium-sized business, with a powerful multiple pricing level inventory, multiple currency transaction functionality, integrated payroll, and more.

- Track your inventory and your money
- Process your payroll
- Track your billable time
- Maintain accurate accounts
- Process sales and purchases
- Setup and manage promotions

Super Choice ready!

Full Version  
Our Price **\$532** ~~\$63~~  
WebCode MYB0037



## MYOB RetailReady

Whilst a cash register can do the job, it has its limitations. MYOB RetailBasic Point Of Sale software and Posiflex hardware, on the other hand, can turn a standard PC into a powerful EASY solution.

MYOB RetailReady enables you to:

- Search for stock and maintain stock items
- Analyse what's selling, what's not and GST collected
- Manage Lay-bys and process refunds
- Collect and analyse customer information
- Track credit card surcharges
- Export to most MYOB business software products



Full Version  
Our Price **\$769** ~~\$130~~  
WebCode MYB0040

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1300 658 600

E-STORE



## FileMaker Pro 7

FileMaker Pro 7 is the easiest-to-use, most customisable database software that effortlessly manages all your information. Gain insights into your business so you can make more informed decisions and enhance productivity. With over 100 new and improved features, you can turn your ideas into creative and customised solutions, tailor them to solve your specific business problems and share them securely with your whole workgroup.

- Organise all your data: PDFs, images, video, presentations, Excel and Word documents.
- Develop document management systems to track and archive workgroup data.
- Solve problems immediately with 30 free starter solutions for business, education and home.
- Create fully relational database solutions quickly.
- Link your data with the new intuitive relationships graph.
- Exchange data with Microsoft Office and many other applications.
- Develop and distribute secure business solutions over your networks or through single-click Web publishing.
- Control access through a unified accounts and privileges security model.



## Creating a Database in FileMaker: vopc

Smart, focused, full-colour guide is the complete package for users who want to create their first FileMaker Pro database - now!



Academic  
Our Price **\$239**  
WebCode F1L0135

Upgrade  
Our Price **\$275**  
WebCode F1L0134

Full  
Our Price **\$445**  
WebCode F1L0133

Save **\$10**

Save **\$24**

Book-Paperback  
Our Price **\$19**  
WebCode JGM0072

## Buy More, Save More

Buy a VLA that includes at least 10 units of FileMaker Pro 7 and you can add a FREE copy of FileMaker Developer 7, PLUS, you have the option to add one copy of FileMaker Server 7 or one copy of FileMaker Server 7 Advanced at a huge 50% off the normal price! This offer is valid between 27 March 2005 and 24 September 2005, for further details go to <http://www.filemaker.com.au/promos/vla.html>.

## Buy 4 copies of FileMaker Pro 7 and get a 5th copy for free!

The ideal solution for small businesses, workgroups, or departments. This product is designed to start off your workgroup of 5 or more users (1 manual and 1 CD are included in the 5 Pack), and provides a flexible way to grow with your workgroup.

Customers will receive a FileMaker Pro 7 five pack which contains one CD and five separate codes. Promotion starts 28 March 2005 and finishes 23 September 2005. Eligible SKUs include 5-pack Retail, 5-pack Upgrade and 5-pack Edu/Govt. For more information go to: <http://www.filemaker.com.au/promos/>

## MoneyWorks Gold

MoneyWorks Gold is the comprehensive accounting solution for businesses with a requirement for flexible reporting, departmental accounting, inventory, job costing and/or multi-user networking. Designed for FileMaker!



**FileMaker Developer 7 FREE!**



## Buy a 5-License pack of FileMaker Pro 7 for the price of 4-licenses

**Want to take advantage of these fantastic offers?  
Call City Software Managed Accounts on 1300 761 761**

### FileMaker Developer 7

An enhanced version of FileMaker Pro with integrated developer tools and utilities to help you build better databases faster. With new features, including custom functions and file maintenance tools and enhancements to the Database Design Report, script debugger and customisation options

- Streamline database development and maintenance
- Develop and troubleshoot solutions more effectively
- Deploy more customised solutions

Academic  
(F1L0141) **\$425**



Our Price **\$830**  
WebCode F1L0139

Save **\$45**

### FileMaker Server 7

New server software is easier to use, faster and more secure with virtually unlimited data hosting capacity. This high performance server software that efficiently manages shared database solutions, enables you to: share databases with up to 250 users; improve the performance of shared databases; host virtually unlimited amounts of data; administer databases centrally or remotely; and protect your data with advanced security features.

Upgrade  
(F1L0143) **\$849**  
Academic  
(F1L0144) **\$875**



Our Price **\$1650**  
WebCode F1L0142

Save **\$99**

### FileMaker Server 7 Advanced

FileMaker Server 7 Advanced is an enhanced version of FileMaker Server 7 that includes powerful web publishing and connectivity options. Using robust server connectivity options and the new powerful features you can:

- Share and integrate solutions over the web
- Host massive amounts of data
- Easily configure and maintain your database



Our Price **\$4199**  
WebCode F1L0145

Save **\$190**

## Centennial Media Training for FileMaker Pro 7

Providing thorough and comprehensive training into the principles and features of FileMaker Pro 7. Proceed step by step with easy to understand methods and techniques.

Basic (CEN0054) **\$188**



Intermediate  
Our Price **\$188**  
WebCode CEN0055

Save **\$10**

**RENT SMART**  
Because buying isn't

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## Borland Delphi 2005 Enterprise

With Delphi, C#, Microsoft .NET Framework and Win32 support for GUI, Web, database, and ALM in one hyperproductive RAD environment, every Windows development task is easier, better, and faster. Delphi 2005 is all the power of Delphi and more for Microsoft .NET and Win32.

Architect (BOR0123) \$5035  
Professional (BOR0119) \$1579



Our Price **\$3595** Save **\$209**  
WebCode BOR0121

## Borland JBuilder 2005 Enterprise

JBuilder 2005 Enterprise simplifies Web and Enterprise JavaBeans development with two-way visual designers and rapid deployment to J2EE application servers. Power productivity with innovative JavaServer Faces, Struts, and Web Services designers, distributed refactoring, and integrated performance tools.

Developer (BOR0127) \$720



Our Price **\$5050** Save **\$297**  
WebCode BOR0125

## Borland InterBase 7.5

A high-performance, cross-platform, embeddable database that provides multiprocessor support. Easy installation, automatic crash recovery, and minimal maintenance.



Contact CSW Managed Accounts on 1300 761 761 for more information

## Crystal Reports XI

### Creating and delivering information for extreme business insight

New Crystal Reports® XI is designed to increase productivity and reduce the time spent designing, managing and delivering reports via the web. New features enable you and your end users to experience high quality viewing, printing, and exporting with less effort. These new features include an enhanced designer to speed up data access and formatting, dynamic cascading prompts to minimize report maintenance, and the editable RTF format to easily modify reports in standard word processing applications.

### Access and present any data the way you want

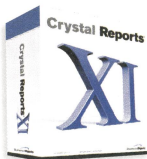
- Flexible and unconstrained database connectivity
- Visually understand complex information with highly formatted reports
- Automated wizards and reusable templates speed report production

### Deliver the right information to the right people at the right time

- Real-time and scheduled reports delivered when and where you need them
- Scalable and reliable reporting services for speed of thought information access
- Personalized reports for interactive exploration

### Universal integration with applications and portals

- Extensive SDKs to view, print, export and modify reports within an application
- Support for leading web application servers and platforms
- Pre-built portal integration kits for quick deployment



Standard Edition	Professional Edition	Professional Upgrade	Developer Edition	Developer Upgrade
Our Price <b>\$237</b> Save <b>\$74</b>	Our Price <b>\$598</b> Save <b>\$191</b>	Our Price <b>\$312</b> Save <b>\$94</b>	Our Price <b>\$720</b> Save <b>\$229</b>	Our Price <b>\$390</b> Save <b>\$125</b>
WebCode SCR0334	WebCode SCR0332	WebCode SCR0333	WebCode SCR0324	WebCode SCR0325

## Crystal Reports Server XI

Crystal Reports Server is a complete reporting solution that helps small and medium-sized businesses create, manage, and deliver reports - via the web or embedded in enterprise applications.

It addresses all steps in the reporting process - from data access and report design, to report management and delivery, to report integration with portals and applications. Plus, it includes Crystal Reports XI, the world standard for report creation, making it easy for existing or new Crystal reports to be shared over the web. One year of technical support and maintenance is also included for rapid deployment and peace of mind.

Crystal Reports Server includes Crystal Reports XI Professional for report design, and comes with a 5 concurrent user access license.

Contact CSW Managed Accounts today to discuss your needs on 1300 761 761.



## Dantz Retrospect 7 Professional

Designed for homes and home offices, Retrospect Professional protects a single Windows desktop or notebook, or a small network of Windows, Macintosh, and Linux desktops and notebooks. Automated technology delivers fast backups and smart restores with unparalleled accuracy. Retrospect Professional is easy to use, enabling you to get your first backup running in less than ten minutes.

Dantz Retrospect 7 Disk to Disk (DAN0016) \$445

Dantz Retrospect 7 Single Server (DAN0013) \$1045



Our Price **\$199** Save **\$40**  
WebCode DAN0012

## Dantz Retrospect 7 Small Business Server Standard

Retrospect Small Business Server Standard is designed for a business with a server running Windows Small Business Server Standard edition. It provides licenses to protect the server plus networked desktops and notebooks. Licenses can be purchased to protect additional networked servers.

Dantz Retrospect 7 Small Business Server Premium (DAN0015) \$1112

Dantz Retrospect 7 Multi Server (DAN0017) \$1949



Our Price **\$737** Save **\$68**  
WebCode DAN0014

## ACT! 7 Retail

### Make contact. Build relationships. Get results.

- Organise your data for quick and easy access
- Manage and grow your business relationships
- Link to your Palm OS® or Pocket PC handheld device
- Stay on top of your schedule 24/7
- Forecast and track sales opportunities
- Works with Microsoft® Outlook®
- Academic (ACT7007) \$146
- Upgrade (ACT7001) \$154



Full  
Our Price **\$263** Save **\$36**  
WebCode ACT7000

## The Internet, controlled.

getbusi is the easiest way to keep your organisation's Internet usage work focused.

- You decide who gets priority speed web access
  - You decide which websites can and cannot be viewed
  - You decide who can and cannot access the web
- getbusi combines powerful bandwidth management, content filtering, and monitoring and reporting with an easy to use browser based interface. All designed to seamlessly integrate with your existing office network.



getbusi  
web access management

Contact CSW Managed Accounts on 1300 761 761 for more information

0-25 User	26-100 User	101-300 User
Our Price <b>\$2992</b> Save <b>\$187</b>	Our Price <b>\$4672</b> Save <b>\$295</b>	Our Price <b>\$7673</b> Save <b>\$480</b>
WebCode GET0001	WebCode GET0002	WebCode GET0003

## Norton Internet Security Solutions - Secure & Protect!



### Key Features:

Which is right for you? Use this handy table to compare our Internet Security solutions.

	Norton AntiVirus 2005	Norton AntiSpam 2005	Norton Personal Firewall 2005	Norton Internet Security 2005	Norton Internet Sec. Antispyware Edition 2005
	<b>Single User</b> (SYM9385) <b>\$77</b>	<b>Single User</b> (SYM8494) <b>\$68</b>	<b>Single User</b> (SYM8495) <b>\$81</b>	<b>Single User</b> (SYM8496) <b>\$99</b>	<b>Single User</b> (SYM9629) <b>\$119</b>
Removes viruses, worms, and Trojan horses automatically	•			•	•
Scans and cleans email and instant messages of viruses	•	•		•	•
Detects certain non-virus threats such as spyware	•	•		•	•
Blocks Internet worms at the point of entry	•	•		•	•
Detects viruses in compressed file archives in real-time	•			•	•
Filters out spam email		•		•	•
Blocks email in selected languages		•		•	•
Detects offensive email		•		•	•
Blocks banner ads and pop-ups		•	•	•	•
Hides your computer from hackers			•	•	•
Blocks online intrusions			•	•	•
Protects your personal information on the Internet			•	•	•
Blocks inappropriate or distracting Web sites			•	•	•
Automatically detects and removes both spyware and adware			•	•	•
Notifies you about high-level Internet threats			•	•	•
Downloads new protection updates automatically	•	•	•	•	•

**Looking for the latest licensing options? Speak to our managed accounts team on 1300 761 761**

**3 Pack**  
(SYM8511) **\$121**  
**5 Pack**  
(SYM9587) **\$179**  
**10 Pack**  
(SYM9588) **\$307**  
**Academic**  
(SYM6130) **\$55**

**5 Pack**  
(SYM8514) **\$158**  
**10 Pack**  
(SYM8522) **\$252**  
**Academic**  
(SYM6118) **\$47**

**5 Pack**  
(SYM8493) **\$187**  
**10 Pack**  
(SYM8523) **\$319**  
**Academic**  
(SYM6123) **\$55**

**3 Pack**  
(SYM8512) **\$178**  
**5 Pack**  
(SYM9614) **\$272**  
**Academic**  
(SYM6121) **\$73**

**Academic**  
(SYM6137) **\$79**

## Symantec Norton GoBack 4

Restore your PC to a healthy state by going back minutes, hours, or even days (depending on available disk space). Or you can use it to recover individual files and folders, such as accidentally deleted files and previous versions of documents. The new SafeTry Mode makes it easy to recover from problematic software installations.

**Academic**  
(SYM6117) **\$44**

**Protect Your Data!**



**Our Price \$64**

**Save \$15**

WebCode: SYMB519

## Symantec Norton Ghost 9.0

Symantec's Norton Ghost 9.0 provides advanced backup and recovery for your PC. Protect your data by making a backup of your hard drive's contents - without restarting Windows. Incremental backups save you time and disk space. You can even schedule backups to run automatically. Quickly restore individual files, selected folders, or the entire hard drive.

**Academic**  
(SYM6116) **\$78**



**Our Price \$118**

**Save \$31**

WebCode: SYMB517

## Norton SystemWorks 2005 Premier 5 User

Symantec's Norton SystemWorks 2005 Premier gives you powerful tools to solve PC problems and protect data. This easy-to-use suite helps you eliminate viruses, back up your files, and prevent computer problems. A new recovery disk allows you to recover data even when Windows won't start up.

**10 User Pack**  
(SYM8524) **\$448**

**Includes Norton Ghost 5 Users**



**Our Price \$298**

**Save \$81**

WebCode: SYMB404

## Easily organise your hard drive.



**Our Price \$95**

**Save \$24**

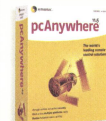
WebCode: SYMB560

## Symantec pcAnywhere 11.5 Host & Remote

Combines secure, industry-leading remote control with remote management and advanced file transfer to help IT personnel quickly resolve helpdesk and server support problems. Offers comprehensive security, including support for 13 authentication types, including RSA SecureID.

**Academic** (SYM6133) **\$160**  
**Host only** (SYM2566) **\$158**  
**5 User** (SYM2565) **\$535**

**Leading remote control solution!**



**Host & Remote**  
**Our Price \$255** **Save \$44**  
WebCode: SYMB620

## Norton Partition Magic 8

Symantec's Norton PartitionMagic 8.0 lets you easily organise your hard drive by creating, resizing, copying, and merging disk partitions. Separate your operating system, applications, documents, music, photos, games, and backup files to reduce the risk of data loss if your system crashes. You can use Norton PartitionMagic 8.0 to run multiple operating systems safely.

**Academic** (SYM6111) **\$66**







## ScanSoft PDF Create! 3

Instantly create PDF documents that are compact and easy to e-mail, can be universally viewed on the Web, and that print just as if they came from the original application.

- Improved Creation Speed
- Reduced and Optimized File Sizes
- International Language Support



Full  
Our Price **\$75** Save **\$24**  
WebCode: SCA0030

## ScanSoft PDF Converter 3 Pro

The first and only product that combines PDF creation from any PC application with the amazing ability to turn PDF files into fully-formatted Microsoft Word documents. This solution includes everything you need to create, convert and edit PDF documents!



Full  
Our Price **\$145** Save **\$50**  
WebCode: SCA0039

## ScanSoft PDF Converter 3

Convert PDF files into documents, forms and spreadsheets that look like the original – complete with text, columns, tables, and graphics! Information is set free – free to be edited & free to be integrated into your documents and presentations. Improved formatting, image-only PDF handling and page-range selection mean you'll save more time than ever before.



Full  
Our Price **\$75** Save **\$30**  
WebCode: SCA0039

## ScanSoft Dragon NaturallySpeaking™ 8 Standard Edition

The fast, easy and accurate way to convert talk into text. Designed for Australian speech and more accurate than ever before – achieve outstanding accuracy levels of up to 99%!  
Talk to your computer and watch your words instantly appear in letters, e-mails, instant messages and chat rooms.



Full  
Our Price **\$168** Save **\$31**  
WebCode: DRG0003

## ScanSoft Dragon NaturallySpeaking™ 8 Preferred Edition

Talk to your computer and your words instantly and accurately appear in virtually all Windows-based applications. Search the Web by speaking URLs and links. (noise-cancelling microphone included).



Upgrade (DRG0004) \$165  
Academic (DRG0005) \$295  
Full  
Our Price **\$335** Save **\$64**  
WebCode: DRG0002

## ScanSoft Dragon NaturallySpeaking™ 8 Mobile Edition

Whether you're heading for an appointment or going about your business, use the digital recorder to dictate important notes and documents. Back in the office simply plug the recorder into the PC, transfer your file and let Dragon NaturallySpeaking Preferred automatically transcribe your dictation.



Full  
Our Price **\$599** Save **\$100**  
WebCode: DRG0001

## ScanSoft PaperPort® 10

PaperPort 10 is the easiest way to turn piles of paper and photos into organised digital files that you can quickly find, use and share. PaperPort provides a unique visual desktop that displays small thumbnails of your documents for fast browsing. End the frustration of looking for paper or digital documents by searching for words inside your files with the exclusive All-in-One Search.



Academic (SCA0020) \$140  
Full  
Our Price **\$168** Save **\$31**  
WebCode: SCA0018

## ScanSoft PaperPort® Professional 10

Get sorted with the industry standard in desktop document management. Organise, find and share your paper and digital documents. PaperPort Professional 10 is the most productive and cost effective way for everyone in your office to organise, find and share paper and PDF documents.



Academic (SCA0021) \$305  
Full  
Our Price **\$328** Save **\$71**  
WebCode: SCA0019

## ScanSoft OmniPage Pro® 14 Office

A powerful productivity tool that delivers the most accurate and precise document conversion available today. Quickly turn PDF files and stacks of paper (letters, contracts, tables, manuals) into easily editable word processing and spreadsheet documents. Everything you need to convert, edit, process, and share your paper and PDF documents.



Upgrade (SCA0006) \$299  
Full  
Our Price **\$1048** Save **\$231**  
WebCode: SCA0005

## Productivity Applications from ScanSoft®

### ACT! 7.0 + PDF Create! 3 Business Value Pack

ScanSoft PDF Create! is the fast, reliable and affordable way to turn all of your PC documents, drawings and images into PDF files.

- Automated batch creation
- Optimised, small files
- Combine different files to create an organised document
- Automatic PDF-to-E-mail
- Watermarks and stamps
- Password security, 40 and 128-bit encryption
- Advanced font embedding, graphics and page size controls

#### #1 Selling Contact & Customer Manager

- Build contact. Make relationships. Get results.
- Organise your data for quick and easy access
- Manage and grow your business relationship
- Stay on top of your schedule 24/7
- Forecast and track sales opportunities
- Share customer information securely
- Link to your Palm OS or Pocket PC handheld device
- Works with MS Outlook



Bundle  
Our Price **\$275** Save **\$24**  
WebCode: ACT7010

### TextBridge Pro 11

The simple and fast way to convert paper into editable electronic documents, saving time and increasing productivity. New OCR engines are designed to deliver the most accurate TextBridge results ever – even on complex pages with graphics and tables. New text editor makes processing and proofing faster and more intuitive than ever before.

Academic (TEX0003) \$88



Full  
Our Price **\$129** Save **\$40**  
WebCode: TEX0002

## Productivity Applications from ScanSoft®

### ScanSoft Volume Licensing: Now Available!

ScanSoft, Inc. is the leading supplier of imaging, speech and language solutions that are used to automate a wide range of manual processes – increasing productivity, reducing costs and improving customer service. Now whether you are a small work group, large business, government or educational institution you are able to access ScanSoft's new Volume Licensing.

If you're a small workgroup, you may prefer an individually packed five-user license kit. For 10 or more users, ScanSoft volume licensing offers you discounts for buying in bulk. Contact City Software Managed Accounts on 1300 761 761 for volume licensing on the following products: Dragon NaturallySpeaking 8, OmniPage Pro 14 Office, PaperPort Professional 10, PDF Create!, PDF Converter and PDF Converter Professional. Government and academic pricing also available.

Contact our Corporate, Government & Educational Sales Team on 1300 761 761 for all your ScanSoft Licensing requirements

estore.com.au



cs.w.com.au

## Pinnacle Studio 9

Create spectacular movies using numerous professional quality features and integrated DVD/DVD burning capabilities. Pinnacle Studio 9 provides image stabilization, automated editing, automatic color correction, noise removal, and surround sound, while maintaining total ease of use.



**Our Price \$168** **Save \$11**  
WebCode: PIN0074

## Pinnacle Studio 9 Plus

An advanced video editing and disc authoring application whose intuitive interface and seamless workflow provide video enthusiasts with on-demand access to hundreds of professional-quality functionalities like chroma-key and picture-in-picture effects, image stabilization, automated editing.

Academic (PIN0106) \$132  
Upgrade (PIN0094) \$115



**Our Price \$215** **Save \$34**  
WebCode: PIN0091

## Pinnacle Studio 9 Media Suite

Pinnacle Studio 9 Media Suite is a complete suite of software to maximize your creativity. It includes:

- Studio 9 Plus
- Corel PhotoBook
- Steinberg WaveLab Lite
- Instant Copy
- Instant DVD Recorder
- Instant Cinema
- Instant Disc
- Instant Backup



**Our Price \$259** **Save \$40**  
WebCode: PIN0102

## Sony Vegas 6 & Vegas 6 With DVD

With powerful video and audio production tools, Vegas software provides a complete and integrated solution for digital video, audio recording, editing and mixing, streaming content creation and surround sound production. Includes bonus ACID Music Studio valued at \$220!

Vegas 6+DVD  
full \$892



**Our Price \$610** **Save \$39**  
WebCode: SON0023

## Sony Vegas Movie Studio+DVD

Vegas Movie Studio and DVD Architect Studio software provide you with a powerful, integrated and easy-to-use set of features that let you bring your collection of videos, digital photos and music to life. Includes interactive tutorials. Use DVD Architect Studio software to burn your creations to DVD, produce movies containing multiple menus, buttons and links, or create slideshows and music compilations.



**Our Price \$176** **Save \$33**  
WebCode: SON0010

## Ulead DVD Movie Factory 4

Ulead DVD MovieFactory 4 is the easiest and quickest way to turn any video and photos into high quality DVD and VCD movies. Burn video straight to disc using no hard drive space. Create impressive motion menus with button and text design control. Produce professional-looking movies to play on any DVD player or computer.



Upgrade (ULE0075) \$57

**Our Price \$89** **Save \$10**  
WebCode: ULE0073

## Ulead DVD Picture Show 3 Deluxe

The ideal companion for your digital camera, combining two powerful programs for managing your photos and creating exciting multimedia slideshows that play on your DVD player.



**Our Price \$89** **Save \$10**  
WebCode: ULE0061

## Sony ACID Pro 5

ACID Pro software is the original loop-based music creation application. This award-winning program lets you create original songs, remix tracks, produce 5.1 surround mixes, develop music beds, score videos, and more. Intuitive "pick, paint, and play" interface. Advanced professional features. Includes over 1,000 royalty-free loops and Native Instruments VSTi soft synth bundle. Includes bonus Sound Forge Audio Studio valued at \$220



**Our Price \$418** **Save \$51**  
WebCode: SON0018

## Sony ACID Music Studio 5

Built on award-winning ACID software technology, ACID Music Studio software provides all the tools you need to create your own music, remixes, soundtracks and CDs. Simply select from over 1,000 professionally recorded music loops in multiple genres and instrumentation, paint them into the tracks, and play them back. ACID Music Studio software automatically matches the tempo and musical elements so everything plays back together and sounds great.



**Our Price \$154** **Save \$15**  
WebCode: SON0011

## Ulead PhotoImpact 10

PhotoImpact 10 gives you the most innovative image editing tools for the PC. Edit, manage and share digital photos, plus so much more. More digital photography tools, more filters and effects, more content and more learning resources. It's everything you need to produce professional results.

Upgrade (ULE0059) \$110



**Our Price \$165** **Save \$24**  
WebCode: ULE0058

## Ulead DVD Movie Factory 4 Disc Creator

Ulead DVD MovieFactory 4 Disc Creator is a whole new world of CD and DVD making. Burn movies, slideshows, data and music to CD or DVD in an instant.

Upgrade (ULE0076) \$142



**Our Price \$175** **Save \$24**  
WebCode: ULE0074

## Sony Sound Forge 8

Sound Forge software is an award-winning digital audio editor that includes a powerful set of audio processes, tools, and effects for recording and manipulating audio. Sound Forge 8 now includes CD Architect software for producing professional Red Book audio CDs. These industry-standard applications are the professionals' choice for audio editing, audio recording, effects processing, streaming content creation, CD mastering, and more. Includes bonus CD Architect and Noise reduction filter valued at \$319



**Our Price \$429** **Save \$40**  
WebCode: SON0019

## Sony Sound Forge Audio Studio 7

Sound Forge Audio Studio software provides all the tools you need to record your own music, edit audio, create streaming media and burn songs to CD. Capture live recordings of your music, instruments or vocal performance, or import music from your CDs. Edit audio in over 10 popular formats. Apply over 30 built-in effects such as EQ, Reverb, and Delay.



**Our Price \$143** **Save \$26**  
WebCode: SON0012

## Ulead My Scrapbook 2

Everything you need to create scrapbook pages, background paper, clip art and titles on your computer. Customize and print a variety of scrapbook-themed pages and background paper to 8.5"x11" or 12"x12" format. Improve not-so-great photos with commonly used photo-editing tools. It's your complete scrapbooking software.



**Our Price \$45** **Save \$5**  
WebCode: ULE0056

## Ulead Video Studio 9

If you've never edited a movie before, make one in three easy steps using the new Movie Wizard mode. Share finished projects on DVD, tape, the Web, and mobile devices. Unmatched stability, high-speed rendering and real-time performance mean less waiting and more time for creating.

Upgrade (ULE0072) \$95



**Our Price \$175** **Save \$24**  
WebCode: ULE0071

## Microsoft Virtual PC 7.0 for Mac

Expand the power of your Mac with Microsoft® Virtual PC for Mac Version 7, the application that makes it possible for you to access PC-only software, files, networks and devices from your Mac. Virtual PC 7, which is compatible with the Mac OS X, offers important improvements in support, speed and reliability.



**Our Price \$283** **Save \$16**  
WebCode: MSA3754

## Microsoft Mini Mate Bundle

The perfect companion for the new Mac Mini or any Mac where users need the best productivity software and some very cool wireless products to go with it.



**Our Price \$239** **Save \$40**  
WebCode: MSA3761

## Microsoft Office 2004 for Mac in a Snap

As a Mac user, you may often feel like you are in a unique world and that the programs you use are even more unique. Microsoft Office 2004 for Mac is no exception and this book covers all of the innovative program features. Packed with more than 160 essential tasks, tips and techniques for the new Mac version of Microsoft Office 2004, this book will help you zero in on the task you're most interested in so that you can learn and get that you want to work.



Book - Paperback  
**Our Price \$32** **Save \$7**  
WebCode: PGM0012

## Tiger OS X

Meet the world's most advanced operating system. Again. Find what you're looking for. Get information with a single click. Create. Explore. Share. Mac OS X Tiger makes it easier than ever to find, access and enjoy everything on your computer.



**Our Price \$193** **Save \$6**  
WebCode: APP0103

## Office 2004 for Mac Student & Teacher

Office 2004 for Mac Student and Teacher Edition gives you all the leading presentation, spreadsheet, word processing, and e-mail software found in Office 2004 for Mac Standard Edition in one convenient, specially priced package.



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**Our Price \$227** **Save \$22**  
WebCode: MSA3749

## Office 2004 for Mac Standard

Includes 2004 versions of Word, Entourage, Excel and PowerPoint and a host of groundbreaking new features. Office 2004 for Mac Standard Edition introduces new features designed to help you transform the way you manage information, share your ideas seamlessly and create impressive documents with confidence.

Licensing pricing available.  
Full (MSA3747) \$605



Upgrade  
**Our Price \$359** **Save \$40**  
WebCode: MSA3748

## Office 2004 Pro for Mac

Microsoft Office 2004 for Mac Professional Edition gives you all the exciting new features of Office 2004 Standard Edition, plus Microsoft Virtual PC for Mac Version 7 to keep you better connected with the PC users in your professional and personal life.

Licensing pricing available.  
Full (MSA3750) \$759



Upgrade  
**Our Price \$498** **Save \$51**  
WebCode: MSA3751

## Extensis Suitscase

Suitscase is an integral part of any creative professional's workflow. For both Windows and Mac.

- Auto-activation (Mac)
- Corrupt font detection and repair (Mac)
- Resolves duplicate font names (Mac)
- Speed and stability
- Font previews
- Print sample pages

Academic (EXT0013)  
\$99



**Our Price \$145** **Save \$15**  
WebCode: EXT0070

## Extensis Portfolio 7

Quickly and easily organize, access and share your digital files with clients, workgroups and partners.

- Catalog files stored anywhere - even offline
- One-Click CD Publishing/ Archiving
- Built-in image conversion
- Extract and store file metadata
- Contact sheet printing



**Our Price \$297** **Save \$32**  
WebCode: EXT0023

## Extensis Photo Imaging Suite

The Extensis Photo Imaging Suite is a collection of image and workflow enhancement tools for the professional and aspiring photographer. Get All Five Essential Tools for One Low Bundle Price! For both Windows and Mac.



**Our Price \$715** **Save \$80**  
WebCode: EXT0071

## Symantec Norton AntiVirus 10 for Mac

Symantec's Norton AntiVirus 10 for Macintosh is the world's most trusted antivirus solution for Macintosh systems. It automatically removes viruses from email attachments, Internet downloads, and other sources—without interrupting your work.

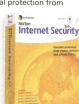


**Works with Tiger OS X!**

**Our Price \$109** **Save \$20**  
WebCode: SYM9643

## Symantec Norton Internet Security 3 for Mac

Symantec's Norton Internet Security 3.0 for Macintosh provides essential protection from viruses, hackers, and privacy threats. Norton AntiVirus—the world's most trusted antivirus software for Macintosh systems.



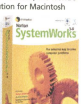
Academic (SYE6048)  
\$98

**Our Price \$149** **Save \$30**  
WebCode: SYM2404

## Symantec Norton SystemWorks 3 for Mac

Symantec's Norton SystemWorks 3.0 for Macintosh is the smartest way to solve computer problems. Norton AntiVirus 9.0 for Macintosh, the world's most trusted antivirus solution for Macintosh systems, removes viruses automatically—without interrupting your work.

Academic (SYE6050)  
\$108



**Our Price \$169** **Save \$30**  
WebCode: SYM2405

## iLife '05

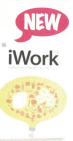
Create digital masterpieces quickly and easily with this completely updated edition of Apple's award-winning iLife suite. With five tightly integrated applications, iPhoto 5, iMovie HD, iDVD 5, iGatherband 2 and iTunes 4.7, it's easier than ever to create cinematic slideshows with your photos and music, edit a movie in high definition, produce the perfect song, and then bring them all together on a stunning DVD.



**Our Price \$115** **Save \$5**  
WebCode: APP0105

## iWork '05

Create, publish and present your work with style. Keynote 2 and Pages, the two remarkable applications in iWork '05, make it easy to create stunning presentations and media-rich documents.



**Our Price \$115** **Save \$5**  
WebCode: APP0107

RENT SMART  
Because buying isn't

SEE PAGE 3 FOR DETAILS



# Symantec's New Norton Internet Security 2005 AntiSpyware Edition

## Blocks spyware and adware automatically

Symantec's Norton Internet Security™ 2005 AntiSpyware Edition provides essential protection from viruses, hackers, and privacy threats in one easy-to-use solution. This edition includes powerful new Norton™ Spyware Protection (available for Windows 2000 and Windows XP only), which automatically detects and removes both spyware and adware. Norton AntiVirus™ is the world's most trusted antivirus solution\*.

Norton™ Personal Firewall blocks hackers. Norton™ Privacy Control keeps confidential information safe. Norton AntiSpam™ filters out unwanted email. And Norton™ Parental Control blocks access to inappropriate Web sites. Get all-in-one protection against today's most dangerous online threats with Norton Internet Security AntiSpyware Edition.

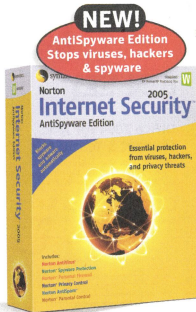
\* Top-selling antivirus software product from December 2000 through February 2005 based on The NPJ Group's retail Top Selling Business Software list.

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#### 5 User With Groupware

Symantec Client Security 3.0 protects your network against viruses, adware, spyware and hackers. Combines virus protection, a firewall and intrusion prevention.

### Symantec Client Security 3.0

#### 10 User With Groupware

Symantec Client Security 3.0 with Groupware protection protects your mail servers against viruses, adware, spyware, hackers and spam. Optional Symantec™ Premium AntiSpam subscription service, powered by Brightmail™ technology.

### Symantec AntiVirus 10.0

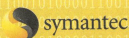
#### 5 User With Groupware

Symantec AntiVirus 10.0 protects your clients and servers against viruses, adware and spyware. Easy, centralized management of virus protection.

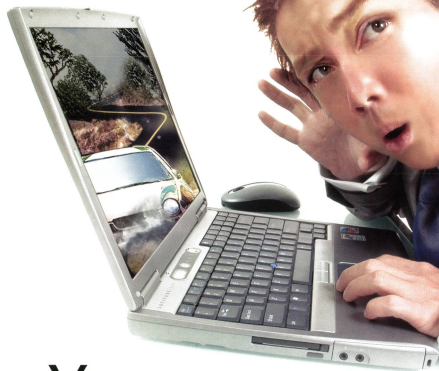
### Symantec AntiVirus 10.0

#### 10 User With Groupware

Symantec AntiVirus 10.0 with Groupware Protection protects your clients and servers against viruses, adware, spyware and spam. Optional Symantec™ Premium AntiSpam subscription service, powered by Brightmail™ technology.







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